

Chapter 3: Alternatives

3.1 Introduction

This chapter describes four alternatives and outlines how each alternative addresses issues identified by the public during scoping. The alternatives include:

- Alternative # 1: No Action
- Alternative #2: Restoration of a Publicly Managed Bison Herd on the Private and/or Public Lands of Willing Landowner(s)
- Alternative #3: Restoration of a Publicly Managed Bison Herd on Tribal Lands
- Alternative #4: Restoration of a Publicly Managed Bison Herd on a Large Landscape Where there are Minimal Conflicts with Livestock

These alternatives were suggested and roughly developed by the Bison Discussion group, a mix of stakeholders that formed in 2013. FWP retained the ability to reject or accept alternatives suggested by this group and added the majority of detail to these alternatives following the final meeting of the group in October 2014.

At least one ‘case study’ has been included for each of the alternatives that considers restoration to illustrate a real life scenario that fits the general criteria of the alternative. The case studies do not represent the only scenarios that could fit within the criteria of the alternative but do represent scenarios to assist in evaluating the feasibility of each alternative. Case studies include general evaluation of economic, social, political and biological impacts of a real bison restoration effort.

Implementation of any alternative at any specific site would require completion of an Environmental Analysis to evaluate all factors and potential impacts of the action in detail. Sites that might fit within the sideboards of a selected alternative would be solicited by FWP if and when implementation of any alternative to restore bison is determined feasible and desirable.

3.2 Alternative # 1: No Action

Implementation would involve FWP completing this EIS process and signing a Record of Decision indicating that it will not take any further action. Implementation would require the least amount of resources in the short term compared to other alternatives but would not resolve pressure to restore bison on the Montana landscape. This alternative could be selected if the present situation is acceptable to decision makers. Yellowstone bison would continue to be managed under the Interagency Bison Management Plan. Selection of the ‘no action’ alternative now would not preclude action at a later date.

3.3 Alternatives #2-#4: General Guidelines

Alternatives #2-4 as described in later sections, allow for bison restoration in some form. The following guidelines would apply to any restoration program and would guide completion of an Environmental Assessment (EA) of a specific restoration site and corresponding management plan. Other specifics to be evaluated in a site/program specific EA include but are not limited to: 1) historical use of the site, 2) current number, use and

availability of AUMs on site, 3) current uses of the site, 4) potential for interactions with recreational users, 5) ESA listed species considerations, 6) tribal versus nontribal hunting opportunity, 7) current hunting pressure, 8) proximity of private domestic bison herds, 9) specific natural resource development concerns or potential conflicts, 10) ungulate winter range use, 11) history of vehicle collisions with other wildlife species at the site, 12) any wilderness designations, 13) any federal land use initiatives, 14) political and social concerns specific to the site, 15) private residences such as seasonal cabins on the site, and 16) archeological sites.

3.3.1 Bison Restoration Project Guidelines

Project Site Guidelines

Site: Any restoration sites would have defined geographic boundaries. The site containment plan would be developed to match these boundaries and could include different levels of management responses depending on the different levels of social tolerance. (Herd containment is discussed below within the Herd Management.)

Landownership: FWP would respect private property rights. Like management of other species, FWP would work closely with landowners to reduce conflicts. Some counties in Montana have passed ordinances stating all bison within the county are to be classified and managed as livestock. Other counties have passed zoning laws that deem all bison within the county 'livestock', restricted to zoned agricultural lands. Still others have passed ordinances to prevent any bison translocation into their counties by FWP or the USFWS without prior county commission approval. Current Montana law prohibits placement of bison as wildlife on private lands without landowner permission but does not prohibit placement of bison as wildlife within counties that have ordinances as described. While counties do not have legal authority over wildlife, FWP would work closely with counties *and* landowners to reduce conflicts in all cases.

Land Use: Restoration of bison should not lead to changes in existing land uses, such as timber harvest and energy exploration, unless mutually agreed upon by current users and the local citizens working group. Consideration would be given to efforts to ensure the presence of bison does not negatively impact other recreational uses such as hunting or hiking. County growth and planning documents would be considered.

Habitat Suitability: In 2011 FWP produced a report on habitat connectivity that mapped native habitats critical to wildlife and wildlife movement across the state (FWP, 2011 <http://FWP.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html>). One of products of this effort depicts continuous habitat blocks of more than 10,000 acres. A second product shows areas with the highest proportion of grassland or shrub habitat. Together these products point to areas where conditions and the human footprint are likely more suitable for bison restoration than areas with less suitable habitat or more human influence (Figure 3).

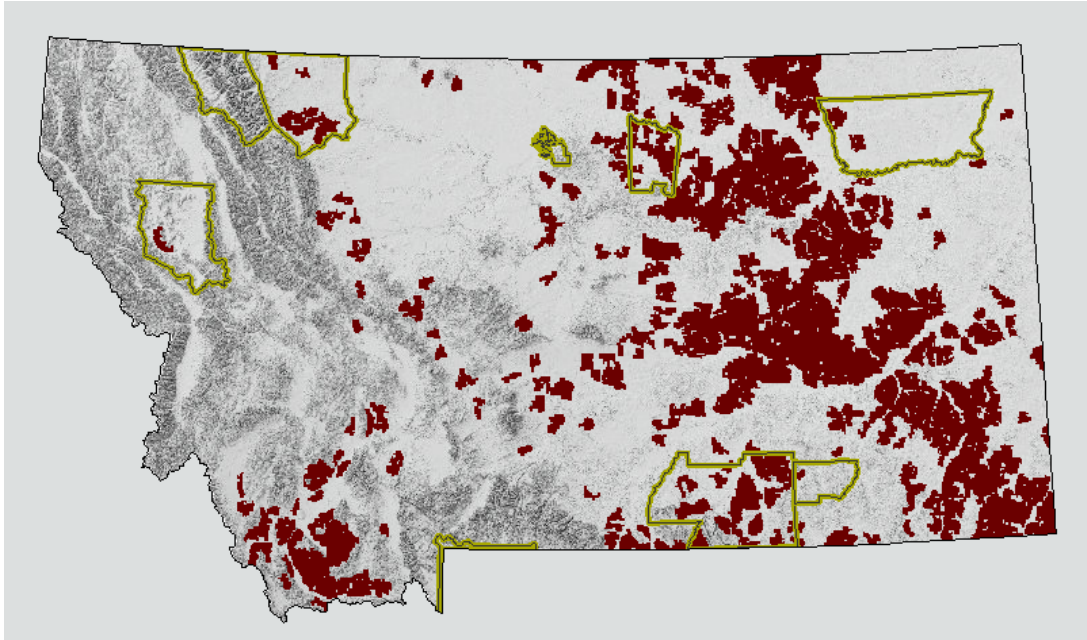


Figure 3. Native habitats critical to wildlife and wildlife movement across the state; dark polygons represent contiguous areas of grass shrub ecological systems with relatively low levels of human influence. Outlined areas represent tribal reservations and national parks.

Grazing Allotments: Current grazing allotments for domestic livestock should not need to be adjusted because of a bison restoration program unless mutually agreed upon by current allotment holder(s). Grazing allotment plans could be changed based on environmental conditions or other direction/desires from the land management agency with jurisdiction.

Pre-Bison Introduction Range Health and Utilization: A range assessment (§87-1-216 MCA) and determination of suitable habitat would have to be described and identified prior to any placement of bison. Natural Resource Conservation Service 'Ecological Site Descriptions' and assessment systems would be used to determine range health, which considers whether soil characteristics, site stability, hydrologic flow, and biotic integrity are operating within the normal range of variability. Monitoring of these factors would occur regularly to ensure range health if bison are introduced. Range assessment would also consider the current seasonal utilization by wildlife. Such assessments may already be available in some locations.

Domestic Bison: An assessment of location and numbers of domestic bison and the land they occupy would have to be conducted. Opportunities and criteria would have to be identified to ensure separation of any domestic and restoration bison. Contingency planning would have to occur to determine steps to be taken in the event of interaction between the groups.

Historical Presence of Bison: Bison were historically found throughout Montana with the largest year round populations in areas east of the Continental Divide (see map in Chapter

2, Roll and Fisher Jr. 2010). While historical presence would not have to be a requirement for any future restoration effort it is logical to assume bison existed historically in certain areas due to habitat suitability. Any restoration effort to areas where bison were not historically present in great number would have to be thoroughly evaluated to ensure adequate habitat is present.

Bison Source Herd Guidelines

Disease: Only bison that are certified as free of reportable diseases by the state veterinarian of Montana could be used for reintroduction. Wild or domestic, bison may carry a number of pathogens or parasites (see Section 2.3.6) but many of the restoration herds are free of reportable diseases of concern, and source bison can be obtained that are free of reportable diseases. Diseases of concern can be managed within restoration herds and are often absent in wild bison populations.

Genetics: Source bison must be free of cattle gene introgression. Potential sources could include bison from: 1) Yellowstone National Park, 2) Turner Enterprises' Castle Rock herd, 3) Elk Island National Park, 4) American Prairie Reserve's herd (originally from Elk Island), or 5) possibly the Henry Mountains herd. Fort Belknap and Fort Peck currently have bison from Yellowstone National Park. The source of any restored public herd should be tested using the Single Nucleotide Polymorphism, aka, SNPs technology.

Management History: Source bison would ideally come from an area where animals are treated more like wildlife than livestock. Bison coming from programs where hunting is used as a management tool are preferred as these bison would already be responsive to hunting pressure and may more quickly adjust to a new location and management actions designed to influence their distribution.

Sex Ratio: When reestablishing a bison herd and developing a management plan, geneticists recommend maintaining a sex ratio as close to 50:50 as possible. This would increase the competition between males, which is important for the genetics of the herd. It would also reduce inbreeding and could have the effect of slower herd growth. However, maintaining a near equal sex ratio could cause younger males to disperse to new locations. Management actions such as hunting could reduce dispersal behavior. A near equal sex ratio could reduce the growth rate of the herd, which could be a positive or a negative based on the program goals.

Age Composition: Since bison are social herd animals it would be important to maintain a social structure within the herd. Some recommend establishing a new herd with both adult and sub-adult bison to prevent the disintegration of the social structure. Others have proposed restoration plans using only sub-adult bison. Specific age composition of any restoration herd would be dependent on the specific site and project objectives.

Number of Animals to Reintroduce: The number of animals to reintroduce would depend on the condition and size of the site and the specific project objectives. Other restoration projects, such as the Alaska Wood Buffalo project introduced 100 animals while the Book Cliffs of Utah introduced 44 animals. Additional animals were released in subsequent years

as desired by the Utah management program. The following analysis assumes an initial soft release of 40 animals.

Herd Management Guidelines

A public bison herd should be managed with as little human interaction as possible. The management of bison, however, could be more intensive during an initial 'test' period to include monitoring movement and range use.

Native Ungulates: Reintroduction of bison should not displace other native ungulates from public lands beyond expected. Bison evolved alongside other native ungulate species, such as elk, mule deer, and pronghorn. When Yellowstone National Park transitioned to a natural management paradigm, Singer & Norland (1994) noted, "competition within the rapidly increasing ungulate guild was not so overwhelming that the population growth of any species was curtailed". Due to the limited number of wild herds, interactions between wild bison and other native ungulates have not been extensively studied, however bison do co-exist with these species in multiple locations (Knowles, 2001; Barmore Jr., 2003). Annual monitoring of ungulates in the restoration program area would be conducted similar to ungulate monitoring conducted across the state by FWP. Any changes in ungulate population trends would be considered within adaptive management strategies.

Sustainable Population Size: The bison would be managed at a level compatible with pre-defined, agreed upon population objectives considering sex and age ratios, harvest success, and dispersal risk (see also Range Carrying Capacity section). During initiation of any project to possibly include a test period the herd could be closely managed to a pre-determined population size. Following any initial phase the herd would be managed to the level supported by FWP, the citizen working group and any other involved entities, e.g., tribes, federal land managers and others. The population growth rate would be dependent on the age and sex ratio the restored bison. Regulated public and tribal hunting could be used to manage the population.

Herd growth varies depending on site conditions and environmental influences. The Mackenzie Bison Sanctuary herd increased at an average of 22.3% per year over a 26 year period after which the population growth declined (calculated from data in Larter et al. 2000). The National Bison Range herd experienced an annual increase of 22.1% from 1909 to 1922, at which point yearly removals were instigated (Gross et. al. 1973, Fredin 1984). The population growth rate in the Henry Mountains estimated from long-term index data (1949-1982) was 3.8% per year, but actual population counts from 1977-1983 showed an increase of 9.2% per year (Van Vuren and Bray, 1986).

Population Monitoring: Population monitoring and evaluation would be conducted to inform management decisions and track progress toward meeting objectives. Monitoring techniques could include aerial and ground surveys, and radio telemetry. Population estimates would be derived annually based on the number of animals counted during the survey, count conditions, ground classification, the number of animals harvested or culled, and a 5% natural mortality rate (Utah Department of Wildlife Resources technique for estimating the Henry Mountains and Book Cliffs bison herds.) In the Book Cliffs,

approximately one half of the animals were equipped with radio transmitters during the beginning of the project, which helped with population monitoring and management issues.

Disease Monitoring: The disease monitoring and response protocol for disease outbreaks for any bison at a restoration site would be coordinated among FWP, the MDOL, and the state's veterinarian. Measures to comply with any applicable animal health protocol required under Title 81, 2(b) or by the state veterinarian must be detailed in a herd management plan (§87-1-216(5a) MCA). Blood samples for annual herd health monitoring could be acquired through field capture. Following establishment of a hunting program, samples could be collected from hunters as is done in other restoration sites such as the Henry Mountains in Utah.

Release Technique: A release technique would be dependent on the specific restoration site and the population objectives. A soft release in which bison are initially held in a large enclosure may increase their tendency to remain in the new area assuming they develop some degree of site fidelity. Knowles (2001) notes that a soft release "would have a high probability of developing a herd range within the designated reintroduction area". The technique has been used by entities such as the American Prairie Reserve. A soft release provides greater opportunity to monitor bison health as animals can be observed during the acclimation period but does come with a higher cost.

Parks Canada plans to begin its project with a herd of predominantly young bison, which are generally better at adapting to new surroundings. The herd will largely be comprised of yearling and two-year-olds, but will include a few mature female bison to help lead the herd and respond to predators. The bison will initially be held and monitored in a temporary soft release paddock that will provide high-quality feed, shelter and water. After three-to-four months of acclimatization, the paddock gates will be opened and the bison will be free to move and forage within their new home range.

Some hard releases of bison result in animals that wander and are likely to travel 30 miles or more in search of their former range (K. Aune, pers. comm., 2014). This can lead to conflict with agriculture or livestock operations in surrounding areas. The International Union for Conservation of Nature document, *Guidelines for Reintroduction and Other Conservation Translocations* provides guidelines for wildlife restoration programs to include discussions of risk, release techniques, and monitoring of wildlife translocations. Such publications could be used to inform decisions on release technique.

Range Capacity and Range Monitoring: The herd would be managed at a level compatible with existing forage resources. FWP would have a forage analysis prepared by a 3rd party per the requirement of §MCA 87-1-216 (5)(e). Sustainable herd size must be established through such an assessment which could follow the NRCS Ecological Site Description system. This system assesses soil, site stability, hydrologic flow, and biotic integrity and determines whether each factor is operating within the normal range of variability. Range assessments must be conducted annually and could include different

seasonal measures. Continued monitoring of these factors would occur to ensure range health with the presence of bison after introduction.

The goals of restoring bison at a certain level would be to manage the vegetation for both grazing and/or browsing animals, including bison, other native wildlife, and perhaps domestic livestock. The following would be desired on the lands where bison are restored: 1) improve or maintain desired species composition and vigor of plant communities; 2) improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity; 3) improve or maintain surface and/or subsurface water quality and quantity; 4) improve or maintain riparian and watershed function; 5) reduce accelerated soil erosion, and maintain or improve soil condition; 6) improve or maintain the quantity and quality of food and/or cover available for wildlife; 7) manage fine fuel loads to achieve desired conditions. Monitoring and research projects could be designed to determine if these desired conditions are being met through the grazing and wallowing behaviors of bison which tend to create specific environments of greater plant diversity than surrounding areas. This increase in plant diversity is utilized by other animals and increases the diversity of wildlife within the region (Foresman, 2001; Picton, 2005; Gates et al., 2010).

Licht (2014) calculated bison herd capacity relative to percent resource allocation to inform the National Park Service's consideration of restoring bison to Badlands National Park (Table 3). Calculations are based on range productivity data for a normal precipitation year. All NPS units in the Northern Great Plains use some form of a plant productivity model as a primary factor in establishing bison population goals. Calculations such as this could be conducted and included as part of a site-specific Environmental Assessment.

| Site | Acres | Herd Size* (15% Resource Allocation) | Herd Size* (33% Resource Allocation) | Herd Size* (50% Resource Allocation) |
|--------|---------|---|---|---|
| Site A | 24,122 | 388 | 854 | 1,294 |
| Site B | 96,680 | 1,666 | 3,666 | 5,554 |
| Site C | 126,679 | 2,370 | 5,214 | 7,900 |

*Includes calves

Table 3. (adapted from Licht, 2014). Estimated bison herd capacity by site and percent resource allocation for Badlands National Park.

Herd Containment/Contingency Planning: FWP would be responsible for managing any public herd so that it remained within the location selected for bison restoration. The management plan for the public herd would need to meet the legal requirements for wild bison in Montana. FWP and the citizen working group would develop the extent of where bison would be managed and make changes based on the information gained during any test period. The containment strategy must describe the following per §87-1-216(5ci) MCA: 1) the specific area where the bison are to be contained; 2) fencing or other

containment measures to be used to contain the herd; 3) a contingency plan to expeditiously relocate bison that enter lands where they are not allowed; 4) a contingency plan to expeditiously fund and construct more effective containment in the event of an escape; and 5) a contingency plan to eliminate or decrease the size of designated areas, including the expeditious relocation of bison if the FWP is unable to effectively manage or contain the bison. FWP is liable for all costs incurred, including costs arising from protecting public safety, and any damage to private property that occurs as a result of FWP's failure to meet the requirements of containment (§87-1-216 (7) MCA). FWP is only liable for damage when all efforts to follow a management plan endorsed by the local citizen working group have not been made.

Animal Tracking: Measures to comply with animal identification and tracking protocols required by the Montana MDOL to identify the origin and track the movement of bison must be detailed in the herd management plan (§87-1-216 (5b) MCA). A specific animal tracking plan would be included within the overall management plan and would have to be developed by the MDOL and FWP, and specific to the restoration action and site (§87-1-216 (5b) MCA).

Public Harvest and Access: Public access would be necessary for wildlife viewers or hunters to access restoration bison. Regulated public hunting would be used to control the herd size to maintain a population that is compatible with private landowner tolerance and range capacity. A harvest strategy would be designed to assist with maintaining the herd within population objective and within a pre-determined area of acceptable habitat use/dispersal. Licht (2014) found that 15% mortality of 1,000 animal bison herd is needed, on average, to keep the population stable. Mortalities could be from harvest, management culling, or natural mortalities.

In the Henry Mountains of Utah and Grand Tetons of Wyoming hunters are issued either sex or cow/calf permits at whatever level is needed to meet management objectives for the population and/or distribution. These permit levels are adjusted annually. If the desire is to stabilize or reduce the population additional cow/calf licenses are issued. If there are problems with animals (generally males) leaving the desired occupied area the number of either sex or bull only tags is increased. Additionally, tags are sometimes issued for a specific problem area to eliminate a few animals in areas beyond the desired occupied area.

Human Safety: Techniques to reduce threats to recreationists, hunters, herd managers, and motorists would be included within the containment strategy for any restoration program. Bison, similar to other large herbivores, including moose and elk, pose small, but manageable risks of personal injury (Nelson, 1965; Fortin and Andruskiw, 2003; Taylor and Knight, 2003; Gates et al., 2010). The level of risk is often dependent on the type of management program that is in place. The manner in which bison respond to humans depends on factors such as the level of habituation to humans, hunting pressure, and management practices. Habituation is defined as "a diminishing response over time to a repeated neutral or unreinforced stimulus" (Zinn, 2008, p. 389). The bison in YNP are very habituated contributing to bison-human conflicts as individuals attempt to approach, pet or feed bison (Conrad and Balison, 1994; Olliff and Caslick, 2003). Site specific programs

would be identified and developed in order to minimize potential threats to human safety. Wildlife underpasses, fencing, and signs are already being used in some areas of Montana to reduce conflicts with wildlife on roadways. Educational programs could be implemented to inform residences and visitors of appropriate behavior and safety precautions to take when in areas where bison may be present.

Research: FWP would work with other agencies and stakeholders to identify priority management concerns and conservation issues that need to be addressed with research, such as containment technique effectiveness, patterns of herd dispersal, population demographics, seasonal range use, foraging and range ecology, effects of bison use on cattle allotments, interactions between bison and native wildlife and/or domestic livestock, etc. FWP would work with subject matter experts, statisticians, and scientists to design projects that would address these research needs. The ensuing projects would provide the necessary information to improve management and conservation efforts for bison. These projects may be run by state, federal, independent, academic, or nongovernment organization scientists. Specific projects requiring multiple areas of expertise or multi-entity involvement could be tackled by a collaborative team of scientists, biologists and topic experts.

Program Implementation Guidelines

Approval Process for Animal Transplants: Similar to big horn sheep transplants, any movement of bison into or within the state for reintroduction would require public input and Fish and Wildlife Commission approval. Montana statute instructs that “importation for introduction or the transplantation or introduction of any wildlife is prohibited unless the Commission determines, based upon scientific investigation and after public hearing, that a species of wildlife poses no threat of harm to native wildlife and plants or to agricultural production and that the transplantation or introduction of a species has significant public benefits” (§87-5-711 MCA). The Fish and Wildlife Commission may approve the introduction of wildlife only if it is “subject to a plan developed by the Department to assure that the population can be controlled if any unforeseen harm should occur” (§87-5-713 MCA). Legal statutes also require that the commission and FWP consult with “the Departments of Agriculture, Public Health and Human Services, and Livestock in all matters relating to the control of wildlife species and exotic wildlife that may have a harmful effect on agricultural production or livestock operations in the state or that may pose a risk to human health or safety” (§87-5-716 MCA).

Management Agreements: Management agreements in the form of Memorandums of Understanding would have to be completed with any private landowner or tribal entity that agrees to host a restoration bison herd. As with all MOUs, there must be trust and commitment between all parties. MOUs would have to include but not be limited to:

- Adaptive strategies to meet containment requirements
- Adaptive strategies to meet herd objectives
- Commitment to and strategies for disease monitoring and response if disease is detected
- Commitment to and strategies to implement the agreed to exit strategy if needed

- Agreement on liability responsibilities of all parties involved in the restoration program and proof of insurance to cover any claims as appropriate
- Commitments to annual reporting and involvement with information and outreach efforts
- Strategies for working with a citizen working group
- Commitments for allowing public access for bison viewing and hunting
- Commitments to honor FWPs continued management of bison and any agreements that may change ownership of offspring
- Commitments to provide resources as needed as agreed to in other sections of the MOU

Citizen Working Group: A citizen working group would be formed for any bison restoration project although FWP would maintain authority for management (§ 87-1-201 MCA). FWP has a long history of working with stakeholders and citizens when making wildlife management decisions, e.g., sage grouse advisory council, wolf management advisory council. The role of the working group would be to recommend adaptive management strategies, serve as a sounding board for the public and involved management agencies, and to monitor success or failure by agreed to standards set forth in the management plan. The role of the agencies would be to implement appropriate recommendations of the group within the statutes and legal mandates of those agencies. Meetings of the working group would be open to the public.

Membership of the group would be open but should include representation from at least the following stakeholders:

| | |
|------------------------------|--|
| Local landowners | Sportsmen and women |
| Local business persons | Local livestock owners |
| Local ranchers with crops | Wildlife advocates |
| Local conservation districts | Local county commissions |
| Pertinent tribes | Local domestic bison producers |
| Recreationists | Pertinent non-government organizations |

Technical representatives must include personnel from:

- FWP
- Pertinent land management agencies

Bison management programs in different states and Canadian provinces use bison working groups and citizen involvement in a variety of ways. Utah's North Book Cliffs Bison Planning Committee was created in 2006 to examine the potential of reintroducing a public herd to the region. The committee was made up of a diverse collection of public agencies, private landowners, and interest groups. The committee established management goals and reintroduction plans.

Parks Canada, the Saskatchewan Ministry of Environment, and the Sturgeon River Plains Bison Stewards (SRPBS) have a process to develop and implement a long-term, adaptive

management plan for the Sturgeon River Plains Bison Herd. This planning process is unique in that the federal and provincial governments have agreed to allow SRPBS, which represents private landowners, to assist as a full partner in development of this plan” (G. Vaadeland, SRPBS, pers. comm., 2014). Similarly, Canada developed a new management plan for the bison herd in the Yukon, recognizing that a cooperatively developed and publicly sanctioned management plan for the Aishihik Wood Bison Herd would ensure the varied interests in the conservation and management of the population are heard and addressed (Government of Yukon, 2012).

The Delta Bison Working Group (DBWG) in Alaska was established in 1992 to bring citizens into the planning process. The DBWG assists the Alaska Department of Fish and Game by helping to establish the appropriate balance between the competing interests of the bison herd and agricultural development. Specifically, the DBWG was asked to assist in development of management options and recommendations (DeBois and Rogers, 2000). The group also works to promote communication among the public, bison interests and the state wildlife agency (DeBois and Rogers, 2000).

Timelines: The management plan for any restoration effort must include detailed timelines for site preparation, bison releases, population monitoring, success or failure measurements and contingency planning. Timelines would be set cooperatively by partners and detailed within any site-specific EA.

Annual Monitoring: Monitoring reports must be completed annually and made available to the working group and the general public. Monitoring reports would: 1) track progress towards population objectives; 2) document any failures of containment; 3) report on range health monitoring; 4) report any research findings; 5) report any conflicts and resolution of these conflicts and 6) document annual project costs.

Range health: FWP would work to improve habitat conditions through appropriate actions such as water source developments, vegetative or mechanical treatments, prescribed fires, or reseeding if and when determined necessary by monitoring. Management plans would include detailed plans for managing range health to include:

- Goals and objectives that are clearly stated.
- Resource inventory that identifies existing resource conditions, concerns, ecological site potentials, and opportunities to enhance conditions.
- Location and condition of existing and planned structural improvements such as fences and water developments including seasonal availability, yield and quality of watering sites.
- Forage inventory of the expected forage quality, quantity and species of forage in each management unit(s) during the grazing period.
- Forage – Animal balance developed as a sustainable grazing plan for the management unit(s), which insures forage produced or available meets forage demand of livestock and/or wildlife of concern.

- Grazing plan for bison that identifies periods of grazing, rest and other treatment activities for each management unit. The plan identifies type and location of any structural practices needed to facilitate the grazing system.
- Contingency plan that details potential problems (i.e., severe drought, flooding) and serves as a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation.
- A monitoring plan with appropriate records to assess whether the grazing strategy is meeting objectives. Refer to Prescribed Grazing (Code 528) Standard and Specification in Section IV of the Field Office Training Guide for the minimum requirements for monitoring.

(The above bulleted items were copied from NRCS Prescribed Grazing (Code 528) Standard - refer to Section IV of the Field Office Technical Guide.

Continued Use of Public Land Allotments: Most BLM livestock grazing allotments are administered under 10 year, renewable permits. Assurance of allotment use beyond those 10 year permits is at the discretion of the local BLM office. Under BLM guidance and policy, bison classified as wildlife would be subject to different management than bison classified as livestock. Cooperative agreements or options for bison as wildlife to graze BLM lands may be available, but would require agreed upon terms by the landowner, FWP, and BLM.

Similar to BLM, the USFS would treat bison as wildlife and bison as livestock differently with respect to its permits and management agreements. An allotment specific analysis and evaluation to comply with National Environmental Policy Act would be done to allow bison as wildlife on USFS lands. Final terms would require agreement by the landowner, FWP and the USFS allotment decision maker, i.e., the USFS District Ranger or Forest Supervisor.

Game Damage: Conflicts between bison and private landowners would be handled through existing FWP game damage programs with a focus on proactive measures to protect property and stored crops. Damage to property and crops is defined as “damage to real property or cultivated agricultural crops.” Wildlife presence on, or consumption of, non-cultivated grass or pastureland does not constitute damage qualifying for assistance under this program (FWP Game Damage Policy, page 2, D00610, August 30, 2002). FWP may authorize assistance in the form of hazing, dispersal devices, temporary or permanent fencing materials, special hunts, kill permits, or game damage supplemental licenses. Such action may be taken only if affected landowner meets all other eligibility criteria for game damage assistance. Definitions of eligibility are found in §87-1-225 MCA; A landowner is eligible for game damage assistance if he/she: (a) allows public hunting during established hunting seasons; or (b) does not significantly reduce public hunting through imposed restrictions. FWP may provide game damage assistance when public hunting on a landowner’s property has been denied because of unique or special circumstances that have rendered public hunting inappropriate. Game damage assistance related to bison would undoubtedly need to be considered as a special circumstance but would ultimately need to be considered within the existing authority of FWP.

Landowner Incentives: Incentives would be dependent on the site selected and the current uses of the area. FWP does not pay for private landowners to host native species on their lands (State v. Rathbone 110 Mont. 225, 100 P.2d86 (Mont.1940)). However, FWP does assist in the conservation of private lands, particularly when the conservation of those private lands provides unique or critical resources for wildlife. Any incentive program would be designed to ensure the targeted lands would provide the habitat necessary for the variety of native species including a restored bison herd. For example: 1) long term leases through the Upland Game Bird Habitat Enhancement program pay for the maintenance of healthy upland game bird habitats that also provide habitat for a diversity of songbirds; 2) perpetual conservation easements purchased by FWP in mountain foothill settings have secured winter habitat for elk herds along with other wintering wildlife. Conditions of these agreements have included, implementation of rest-rotation grazing systems or other practices that conserve native plant communities and ensure available forage for native ungulates and cover and food for other wildlife species. Landowners and FWP could also work with the Natural Resources Conservation Service Farm Bill programs to explore options for restoring or managing native habitats for the long term to support bison.

The Matador Ranch in north-central Montana is involved in a grass bank program through the Nature Conservancy that offers discounted grazing fees on the Matador in exchange for wildlife friendly practices on home operations. The American Prairie Reserve has a program titled 'Wild Sky Beef' that purchases and markets beef raised on ranches that implement wildlife friendly land management practices. Such programs are examples of creative ways that could be used to incentivize landowner participation in bison restoration.

The USFWS has the Partners for Fish and Wildlife program that has equally creative ways to incentivize landowners to tolerate wildlife. Through technical assistance and cost-share incentives this program has re-established natural biological communities and ecological process, increased citizen and community-based stewardship efforts, and contributed to the recovery of at-risk species. Finally, non-government organizations in the past have promoted the restoration of species, in particular carnivores, through payments to landowners for lost livestock.

Incentive programs could be developed by non-government organizations or agencies to increase social tolerance of bison. Any incentive program would have to be carefully negotiated and crafted to ensure landowner benefit and adherence to standard practice and legal statutes of FWP. Appropriate incentives for projects would be developed by a citizen working group.

Adaptive Management: The management plan for any restoration effort must include adaptive strategies to address changing situations or unforeseen circumstances. Regular monitoring of the population and range health would inform any decisions to veer from the management plan. Population objectives established within the management plan would be used as the guide for determining whether the herd size is within an acceptable range. Maintenance of healthy range conditions would be the goal of managing the herd within

objective. Population numbers, population trend, herd distribution, age-sex structure or herd health could all inform a decision to increase, reduce, or eliminate a hunting season. Implementation of the agreed to exit strategy could occur if herd distribution or size becomes unmanageable for some unforeseen circumstance such as a range fire that removes critical forage or extreme winter conditions that result in an ineffective containment strategy. Alternatively, a herd below population objective could result in population augmentation in attempts to boost the population numbers or perhaps to address unacceptable genetic diversity. The intensity of monitoring could be adjusted within reason and resources if concerns arise about herd size being outside objective or range conditions being less than desired. As this herd would be monitored intensely it would be straightforward to determine when alterations to the management plan are needed.

Contingency Strategy: A contingency plan would be developed describing strategies to address disease outbreaks, bison moving to areas outside of the target area, unacceptable impacts to local landowners, extreme environmental conditions that render the range inadequate for a bison herd, or other potential management issues. Per §87-1-216 MCA, any containment strategy must describe contingency plans to include: 1) a contingency plan to expeditiously relocate bison that enter lands where they are not authorized to be; 2) a contingency plan to expeditiously fund and construct more effective containment in the event of an escape; 3) a contingency plan to eliminate or decrease the size of designated areas, including the expeditious relocation of bison if the Department is unable to effectively manage or contain the bison. The Department is liable for all costs incurred, including costs arising from protecting public safety, and any damage to private property that occurs as a result of the Departments failure to meet the requirements of containment (§87-1-216 (7) MCA). FWP would only be liable for damage when all efforts to follow a management plan endorsed by the local citizen working group have not been made.

Exit Strategy: If bison behavior, movement, or distribution patterns become unacceptable and/or the costs to maintain a program become impractical, the program would be re-evaluated and bison could be removed from the program site. The citizen working group would discuss and determine an appropriate response to any unexpected situations or consequences of the program.

Specifically in the event of a disease outbreak within a restoration herd, FWP and the citizen working group would determine an appropriate response that could include removal of all animals. Per §87-2-730 MCA, project animals could be removed through public hunting after being exposed to or infected with a contagious disease as coordinated between FWP and the MDOL. The emergence of a management situation that could not be successfully addressed could lead to implementation of an exit strategy. In Arizona, for instance, bison became more difficult to manage as hunting pressure and natural movements forced them into areas that were difficult for hunters to be effective or into areas where hunting was prohibited (Grand Canyon National Park). Such a situation in Montana could lead to implementation of an exit strategy.

Funding/Cost: Any restoration project plan and site-specific EA would have to include a thorough discussion of budgets and funding sources for both short term and long term project implementation and could include details on the following:

- Cost of bison transport and release
- Costs of containment set up and maintenance
- Costs of disease monitoring and specific herd management to include staffing
- Costs of range management to include staffing
- Costs of contingency plan implementation in the event of an unforeseen circumstance
- Any predicted costs to local communities in the way of increased local services
- Any loss of state income in the form of lost per capita livestock fees
- Any change in local tax revenue due to a shift from domestic livestock to bison as wildlife on an operation
- Any predicted income from the project, e.g., increased visitation to the area by wildlife viewers or hunters

Funding sources would vary dependent on program objectives and specific restoration site locations but could include FWP, private, and tribal sources. Any burden on Montana taxpayers or local communities would be minimized to the extent possible and would have to be carefully considered within an EA. By statute (§87-1-216 (7) MCA) any bison management plan needs to include identification of long term, stable funding sources and funding for effective containment measures.

Costs can vary considerably depending on the restoration approach recommended. Depending upon the alternative chosen, costs to agencies or partners may be zero or substantial (see section 4.4.7). It is difficult to define costs of a program because it is unknown at what scale a program may be implemented.

Information and Outreach: A coordinated FWP public information and outreach effort to outline restoration project objectives, herd management, long term goals, funding sources, etc. would be needed. The effort would be coordinated with land management agencies, tribal entities, and private landowners. The experiences of other states and provinces with bison programs where bison are managed as wildlife would be included in information efforts. Specific efforts would be made to build connections around bison among tribal entities, sportsmen and women, wildlife viewers, local community members and others. An outreach program would include efforts to explain bison as a wildlife species, within current conditions, land uses, and human populations.

3.3.2 Test Project Option for Implementation of Alternative #2, #3, or #4

The above guidelines could be used to implement a five year test project on any of the landscapes described within Alternatives #2-4. A public herd managed by FWP could begin with a small number of animals that would be closely monitored for the test period. A project could begin with 40-50 bison, which is the herd size other programs have started with, including the Book Cliffs project in Utah. A soft-release approach could be used to

condition the animals to the release site and develop site fidelity to limit dispersal out of the target area. All project expenses including any facility construction would have to have dedicated funding prior to project implementation. Within the test period the bison would be closely monitored which could include both ground and aerial monitoring and radio marking of adult animals. Herd containment needs would be determined based on the specific restoration site but could include fencing.

Range monitoring would be conducted during the test period. At a minimum the monitoring program would measure changes in plant biomass and composition over time, bison use of water resources, and bison habitat use. The results from such monitoring would be fed back into management decisions. One or more research projects could be developed to specifically answer questions about range use, herd movement, and herd growth. The herd could be allowed to grow naturally during the test period and could also receive periodic augmentations depending on the desire of the landowners, project cooperators, and FWP. A test project could be extended in time to allow for evaluation of a larger herd size using a large area.

A citizen working group would be involved in development, implementation, monitoring, and evaluation of a test project. The role of the working group would be to recommend adaptive management strategies, serve as a sounding board for the public and involved management agencies, monitor success or failure by agreed to standards set forth in the management plan. Working groups have been used to help guide other restoration programs to include groups within the Henry Mountains, Sturgeon River, and Wood Bison restoration areas.

A test project would comply with all applicable statutes and strive to minimize negative impacts to surrounding landowners, communities, existing land uses, and existing wildlife resources within the area. Any test project would follow the implementation guidelines described above in section 3.3 to include: 1) project site guidelines; 2) bison source herd guidelines; 3) herd management guidelines; and 4) program implementation guidelines. In particular a test project would: 1) only use animals free of reportable diseases and free of cattle gene introgression; 2) involve a pre-restoration range assessment; 3) have a well thought out containment and management plan; 4) have secure full funding for the five year period; and 5) have local community involvement. Prior to the implementation of a test project, a management contingency plan would be developed describing strategies to address disease outbreaks, bison moving to areas outside of the target area, unacceptable impacts to local landowners, extreme environmental conditions that render the range inadequate for a bison herd, or other potential management issues. An exit strategy would also be developed to end the project if management issues arose that could not be addressed through the contingency plan.

The level of public access for viewing and hunting would be described within the test project plan and implemented as appropriate dependent on herd size, growth, and distribution. Public hunting could be used to control distribution of a test herd as allowed within the project plan. Herd management would have to be implemented within constraints of any research projects in order to ensure quality research methods are

followed. Funding would depend on the intensity of monitoring and research desired, and population augmentation costs if desired. Estimated costs of any containment need to include fencing, hazing, or other measures. A test project would allow FWP and cooperators to learn more about how bison use any particular habitat. Annual reports would be made available and would fully report on the herd, range, and any research findings. An outreach program would be developed to ensure the local community and interested parties statewide were updated on progression of the test in addition to informing surrounding landowners, recreationists or site visitors what to expect from bison in the area.

3.4 Alternative #2: Restoration of a Publicly Managed Bison Herd on the Private and/or Public Lands of Willing Landowner(s)

A landowner(s) would be identified who is willing to accept specific management responsibilities of publicly-managed bison. FWP would have primary jurisdiction over the bison. The private landowner(s) could own and/or manage any or all of the intermingled parcels of private land, state land leases and federal permits in the identified focus area. Implementation of this alternative could be done at various scales, i.e., small herd or large herd. Implementation at any scale would follow the guidelines listed above. The difference between Alternatives #2 and #4 is the program size and the level of competition with domestic livestock. This alternative could be implemented on a small scale, in an area where livestock currently graze.

Bison would interact with existing native wildlife and ecological processes. Agreement between FWP and private landowner(s) could include specific direction about land management activities. Access would be required for public hunting and bison viewing. Any hunting program would have to be agreed upon by the citizen working group, FWP, and landowner(s) to include clarification of possible financial incentives for allowing public access.

Any change in land use on a privately owned property or on public lands would be at the discretion of the land owner. Livestock stocking and grazing management decisions would be at the discretion of the landowner(s). Range assessments (§87-1-216 MCA) would be needed prior to finalization of any agreement. The landowner could give up current livestock grazing options in exchange for grazing bison as wildlife. All bison moved to private land would need to be certified free of reportable diseases as determined by the MDOL and state veterinarian. Disease monitoring and response protocol for potential disease outbreaks would be coordinated by FWP, the Montana MDOL, and state veterinarian and followed by private landowner(s).

A piece of land large enough to support an initial release of 40 bison would be sought. The landowner(s) would be held to managing their land to the best of their ability to maintain the herd within agreed to conditions (catastrophic events notwithstanding). Herd composition and population goals appropriate to the site would be determined by a citizen work group, FWP, and landowner(s). The herd plans would have to be in accordance with

Montana laws. Habitat assessments would be needed to address range capacity on an annual basis including all seasonal use.

3.4.1 Case Study #1 for Restoration on the Private and/or Public Lands of Willing Landowner(s) : Utah's Henry Mountains Herd

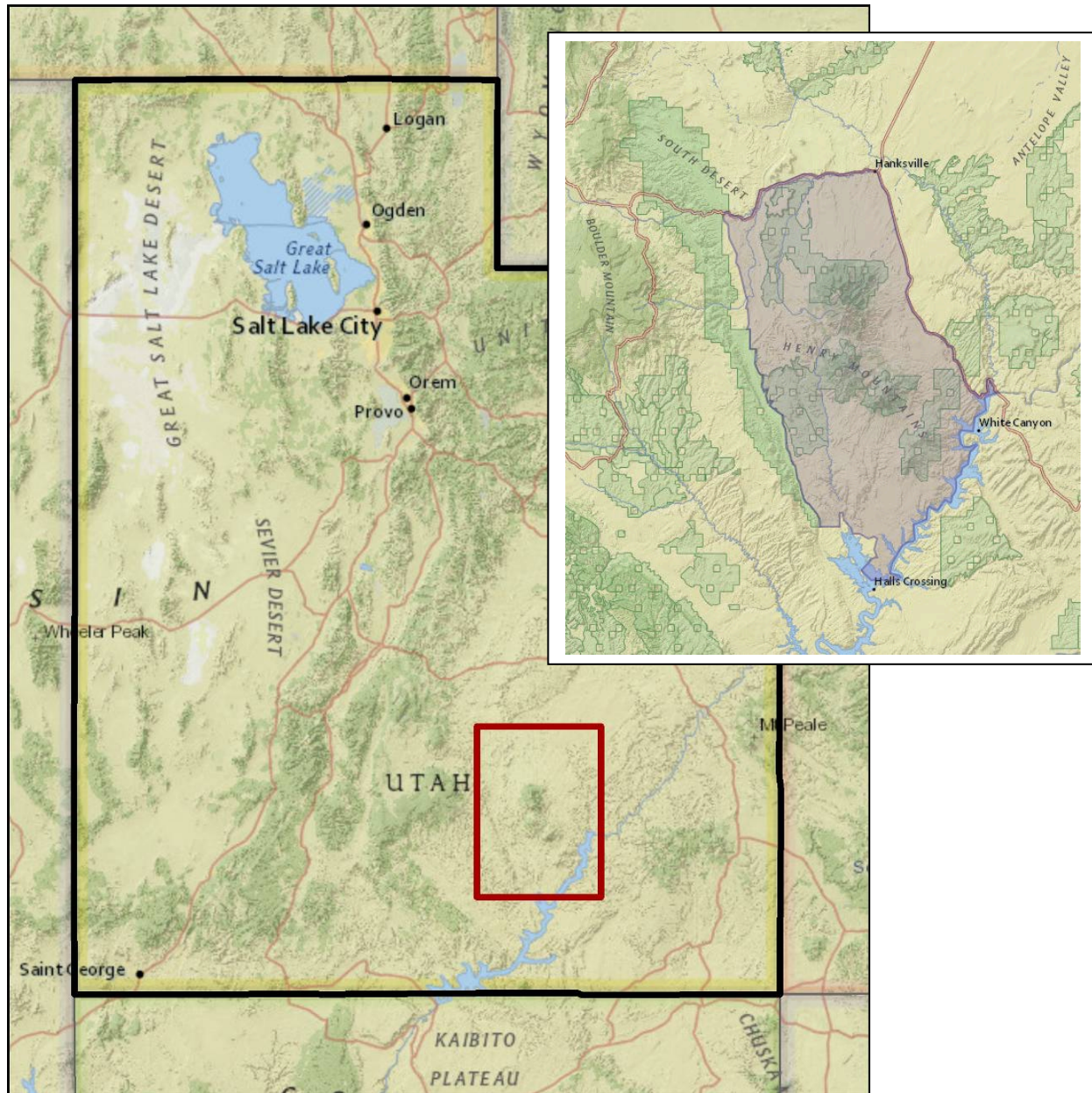


Figure 4. Area of Utah where the Henry Mountains bison herd is managed.

Primary Objective(s) for Bison: The Henry Mountains bison herd is managed for hunter harvest, long term population persistence, genetic conservation, and as a source for other conservation populations (DOI, 2014).

Ownership of Bison: Bison in the Henry Mountains are publicly managed by the state of Utah and 'owned' by the citizens of the state.

Jurisdiction/Agency Responsibilities: The Utah Division of Wildlife Resources (UDWR) primarily manages the Henry Mountains bison herd. The Bureau of Land Management (BLM) and the School and Institutional Trust Lands Administration have cooperative jurisdiction due to the public lands within the area. The Federal Land Policy and Management Act of 1976 gives BLM the authority to manage non-wilderness lands for multiple uses including fish and wildlife conservation but the state retains jurisdiction over managing resident wildlife populations (DOI, 2014).

Herd Details and Management of Herd on Site: A 'wild' herd was reintroduced to the region in 1941 with 18 bison from Yellowstone National Park. Five bulls were added in 1942, following dispersal by some of the original bulls. There has not been a need for additional augmentation to the herd since that time (UDWR, 2007b). The post hunt adult herd size from 2011 -2015 ranged between 296 and 329 with an average of 312. The objective is 325 adults post hunt so the current population is slightly below objective. There has been political and social debate over the appropriate population objective (Wade Paskett, pers. comm., 2014) even though this objective was established based on range carrying capacity (DOI, 2014).

The herd is generally unfenced with the exception of some drift fencing strategically placed to keep bison from entering Capitol Reef National Park. Overall problems with bison outside of the target area have been minimal perhaps in part due to opportunities to haze or kill bison that leave the management area or use lands where they are not welcome. Herd size is managed through hunting and some capture and translocation. In 2009 when the herd was over objective animals were captured and translocated to the Book Cliffs of Utah.

Though parts of the region have significant physical barriers to bison movement, it is probable that population management through hunting has had the greatest impact on herd dispersal. Due to concern that hunting pressure could move animals off the management area, the annual desired permit level of 60-100 permits is managed through a series of split seasons. Some 15-25 permits are issued per season to avoid heavy hunting pressure at any one time or any one location.

Range monitoring and studies are part of the ongoing management programs. There is an interagency range crew, led by the state in cooperation with the BLM and USFS that completes monitoring assessment transects every five years. Additional monitoring is conducted as needed.

Disease management is an ongoing concern for the Henry Mountains herd with three main diseases of note: brucellosis, tuberculosis, and malignant catarrhal fever (UDWR, 2007b). Following the detection of positive titers for brucellosis within the herd in 1962, the herd was corralled, tested, and inoculated for brucellosis. Individual bison suspected of infection were marked and then released for sport hunters to cull. According to all evidence,

brucellosis was successfully eradicated from the Henry Mountains bison herd in the 1960s through capture-test-vaccination and test-harvest-cull of positive reactors (DOI, 2014). Blood from hunter collection kits is tested annually, with no indication of the presence of the disease since 1963 (UDWR, 2007b).

Testing for tuberculosis in 2001 indicated that the disease was not present within the Henry Mountains herd (UDWR, 2007b). There are currently no active sheep allotments in the area as the past active allotments have been changed to cattle allotments in order to reduce the chance that sheep could transmit malignant catarrhal fever to bison (UDWR, 2007b).

Some genetic testing of bison in the Henry Mountains has been completed but more extensive genetic work is planned (DOI, 2014). Preliminary results indicate there is no cattle gene introgression in this herd.

Size and Habitat of the Restoration Area: The area occupied by bison within the Henry Mountains Wildlife Management Area is 300,205 acres (469 mi²) and ranges from 4,800 to 11,500 feet in elevation. The area includes approximately 4,203 acres of private land (UDWR, 2007b). The region consists of steep mountain slopes, flat mesas, deeply eroded canyons, benches, and foothills, which support salt desert shrub, pinyon-juniper, mountain brush, aspen-conifer, and subalpine vegetative communities (UDWR, 2007b). Bison have proved very adaptable and have utilized all of the elevations, topography, and plant communities within the area (UDWR, 2007b).

Ecological Interactions: The bison share the range with native ungulates including mule deer and pronghorn, and both cottontail and black-tailed jackrabbits. As wildfire is a natural, ongoing process in the area (DOI, 2014) the state and BLM have used prescribed fire, mechanical treatments, and reseeding to improve over 40,000 acres of habitat for grazers. These projects are to benefit wildlife in general, not because of habitat degradation by bison. Habitat work in this area varies between \$50,000- 150,000 per year funded by sporting groups as well as UDWR, BLM, and others.

The state has not reduced tags for other species as a result of bison in the area. In 2000 the mule deer population was at 400 animals. Today it is estimated at 2,200 with an objective of 2,000 (Wade Paskett, pers. comm., 2014.). Mule deer with their preference for forbs are negligible competitors with other grazers (Van Vuren, 1983). A small number of elk, 20-30 animals, occupy this area but are generally discouraged as elk occupancy is not desired for the Henry Mountains. The BLM and, the UDWR has indicated a preference for a focus on bison and mule deer management over elk. Studies in the Henry Mountains have found that bison grazing caused no significant impacts on plant species composition (Ware, et al, 2014; Ranglack et al., 2015).

Historical Presence of Bison: The Henry Mountains are within the historical range of Plains Bison but most likely were used seasonally and never sustained high population densities due to the lack of water (DOI, 2014).

Current Uses of the Restoration Area

Recreation: Bison can be viewed by the public and harvested by hunters from roads throughout the Henry Mountains (DOI, 2014). Public hunting of the Henry Mountains bison has been an essential part of the management program. Over 10,000 applications are submitted annually for 60-100 highly sought after once-in-a-lifetime permits. UDWR issues hunting permits by lottery according to the population target and range conditions. The annual harvest is about 55 bison (either-sex and cow-only combined) (DOI, 2014). Managers note that there is an average hunter success of 77% (Wade Paskett, pers. comm., 2014.). There has been an increased effort by sportsmen and women and landowners to work together to reduce bison conflicts. Sportsmen's groups have spent hundreds of thousands of dollars on range enhancement and water resources, and have assisted livestock producers with fence repairs.

Grazing/Agriculture: Bison and cattle have coexisted within the Henry Mountains since 1941. The bison range includes some cattle grazing allotments and one vacant sheep grazing allotment (DOI, 2014). There are 25,600 cattle AUMs permitted on the Henry Mountains range land during the winter and 2,600 during the summer. This is the equivalent of about 4,200 cattle present at any given time in the winter and about 800 cattle present at any given time in the summer (Ranglack, et al., 2015). As the population of bison has increased, so have tensions with regional landowners. Some ranchers have expressed concern over summer bison use of winter cattle grazing allotments (DOI, 2014). Efforts to mitigate these issues include the creation of the Henry Mountains Bison Committee a group that strives to find a balance in uses and general support for the herd.

Cattle are contained successfully with fences that the bison seem to navigate around or over providing them broader access to the area. On occasion, bison go through fences as well. Studies in the region have indicated that while bison and cattle often use different habitats, with bison grazing at higher elevations than cattle, there is substantial overlap in range use (Van Vuren, 1983; UDWR, 2007b). A recent study in the Henry Mountains found that bison at current densities have less of an impact on the grazing resource than lagomorphs (primarily jack rabbits) and cattle (Ranglack et al., 2015). Overall, cattle removed 52.3% of the total grass biomass while jackrabbits removed 34.1%, and bison removed 13.7%. Data from the Ranglack et al. (2015) study found that at the present population density, the Henry Mountains bison herd causes a very modest reduction in the forage available for cattle. Ware et al. (2014) found that that high intensity summer bison grazing, while likely creating short-term reductions in forage availability, has not caused differences in plant community composition or productive potential in the Henry Mountains.

Within the arid climate of the Henry Mountains, grazing capacity is often limited for both cattle and bison by environmental factors. The BLM, UDWR, conservation organizations, and sporting groups have worked together to ensure that grazing continues to be shared by bison and cattle within the area. This effort has been supported by the creation of a Resource Management Plan, Grazing Allotment Plans, and the purchase of grazing privileges from willing sellers (UDWR, 2007b). There have been substantial efforts by agencies and groups to improve the grazing habitat for livestock, bison, and mule deer.

These programs have included prescribed burns, mechanical treatments, reseeding, and improvement of water sources (UDWR, 2007b). The UDWR invested over \$600,000 into a study through Utah State University to improve survey techniques, document habitat use, and evaluate use of range resources by both bison and cattle.

The impact of bison on regional agriculture has been limited. Damage by bison has been limited to drought years and is usually of short duration and low impact (DOI, 2014). Bison strayed onto irrigated agricultural fields during at least two periods of drought in the past 20 years. In both instances the bison were hazed from the fields and the landowner was compensated for damages (UDWR, 2007b). Some low-elevation pastures have been fenced to exclude bison from alfalfa and grass hay fields (DOI, 2014). There have been two damage compensation requests related to bison in the past 30 years and approximately \$2,900 total has been paid for damage (Bill Bates, UDWR, pers. comm., 2014). The state and BLM work closely with grazing permittees and community groups to address conflicts over habitat and water resources (DOI, 2014).

Socio-Political Environment: Some conflict among sportsmen and women and agricultural producers has occurred in the area. Efforts to mitigate these issues included the creation of the Henry Mountains Bison Committee. Public support and/or tolerance of the herd appears to have increased following the creation of this group (Bill Bates, UDWR, pers. comm., 2014).

Landowner Incentives: Private landowners within the area are eligible for habitat improvement work on their lands funded with UDWR dollars. Landowners are also eligible to participate in Utah's program that allocates deer, elk, and antelope tags to landowners that can be sold to hunters for private profit.

Reduced Risk of ESA Listing: This herd is probably not large enough at its current size to significantly impact any ESA decisions.

Funding: The project is funded with a combination of UDWR, BLM, and sportsmen and women dollars. Survey and management costs for this herd average \$25,000 annually. The Henry Mountains area is a high priority for hunters and as a result of bison and trophy mule deer in the area they invest \$100,000 per year on wildlife enhancement projects.

3.4.2 Case Study #2 for Restoration to the Private and/or Public Lands of Willing Landowner(s): Montana's American Prairie Reserve Herd

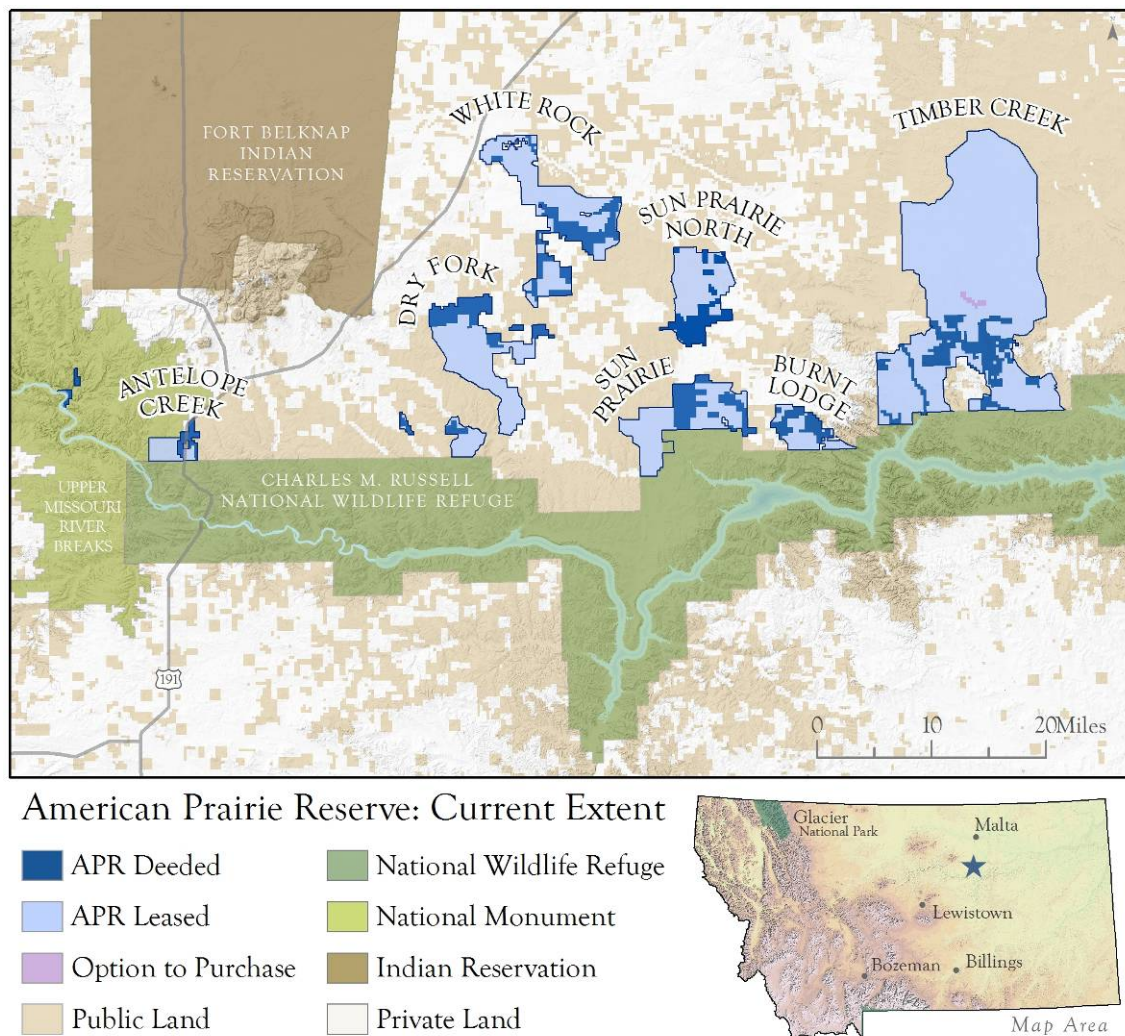


Figure 5. Area of Montana where the American Prairie Reserve is located and where they manage their bison herd, i.e., Sun Prairie section.

Primary Objective(s) for Current Bison Herd: Among APR's primary objectives is to develop one of the largest conservation bison herds in North America and to increase the genetic diversity of that herd. APR manages its current livestock bison herd in order to restore natural prairie ecological processes. The mission of APR is to create and manage a prairie-based wildlife reserve that, when combined with public lands already devoted to wildlife, will protect a unique natural habitat, provide lasting economic benefits, and improve public access to and enjoyment of the prairie landscape. APR notes that its goal is to reach 1,000 bison by 2018.

Ownership of Bison: APR owns the bison on site. The bison are classified as domestic livestock.

Jurisdiction/Agency Responsibilities: APR currently has sole authority over their domestic bison herd. When bison are grazing on private APR lands there is no cooperating land management agency. The Bureau of Land Management (BLM), Department of Natural Resources Conservation (DNRC) and the Charles M. Russell National Wildlife Refuge (CMR) have habitat management authority over the public land allotments where APR bison graze for portions of the year.

Herd Details and Management of the Herd on Site: In 2005, APR began to develop a private bison herd on the reserve. The herd began with 16 bison that were imported from Wind Cave National Park. Through natural growth and additional imports from Elk Island National Park, the herd has increased to 440 animals in 2014. The 2015 spring calf crop is estimated to be around 130 calves.

APR has augmented its herd with mixed ages and sexes to speed growth when deemed necessary. APR's management approach fosters a 50:50 sex ratio.

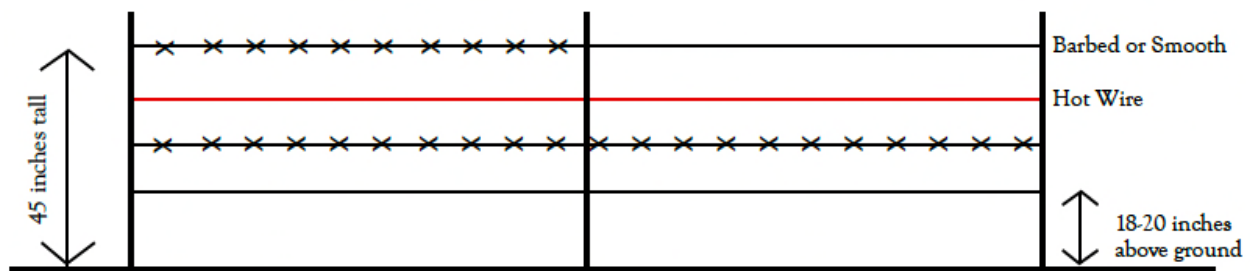
APR operates under a management plan created with bison experts and scientists with the World Wildlife Fund. APR strives to manage its herd with as little human interaction as possible while still meeting the required grazing guidelines when the herd is on BLM or state land. Handling of the bison is conducted only as needed for marking, disease monitoring, or research purposes, e.g., radio telemetry collar deployment. APR does not provide supplemental feed in the winter except in very rare cases where snow has temporarily buried border fences and there is a risk of the bison leaving the reserve and entering neighboring property.

APR's bison herd currently resides within 31,000 acres of the Sun Prairie portion of the reserve (see map). APR has removed over 45 miles of interior cross fencing in order to allow bison to graze unencumbered. As the herd grows, APR will expand the land base upon which bison graze.

APR conducts research on the reserve to gain a better understanding of bison and prairie ecological processes (Kohl et al., 2013). APR is working with researchers to track bison movement and observe grazing patterns within the reserve through the use of radio collars. Adult cows are currently the only animals radio marked. APR recently teamed up with 'Adventurers and Scientists for Conservation' to develop volunteer monitoring studies on the reserve. The monitoring effort provides information on range conditions and wildlife presence.

APR does allow public hunting, although it does not currently allow public hunting nor use public hunting as a management tool for its bison herd.

As domestic livestock, APR's current herd is maintained as a captive herd within wildlife friendly fences. APR has been experimenting with new fence designs to accomplish their objectives and those of their neighbors. In most instances their fences are no more than 45" high and no lower than 18" off the ground and include a high voltage hot wire. Through an intensive camera trapping effort led by researchers on the reserve, APR is gaining more insight as to how different wildlife species are interacting with this fencing. Preliminary results indicate pronghorn, white-tailed deer and mule deer move freely through this fence. A small sample size of elk fence crossings reveal elk jump over or through the fence (K. Kunkel, APR, pers. comm., 2015).



Fence diagram

Figure 6. Diagram of APR's current fence design used to contain their bison.

APR historically tested all animals annually for disease. The current approach is to test at least 20% of the animals on site. Blood samples are acquired through tranquilizer darting in the field rather than herd round ups. No augmentation animals are brought in without being fully tested for reportable diseases. Testing to date has not revealed any diseases of concern within the herd. Aside from the vaccines and testing required during new bison acquisitions, APR does not vaccinate or medicate any of its bison. In the event of a serious communicable disease outbreak, APR notes it would use any means necessary to protect the long-term health of the bison herd and to protect the other private livestock operations in the area.

Any bison found off the management area and not successfully hazed back by APR within 48 hours can be lethally removed by a private landowner. Since initiation of this project, lethal removal has been conducted twice under these circumstances. Hazing with a helicopter was conducted once during extreme deep snow conditions (S. Gerrity, APR, pers. comm., 2015).

Management considerations that must be evaluated for source herds to supplement APR bison include the disease status of the herd, the origin of the herd's founding animals, the level of cattle introgression present, and the management regime the herds are habituated to. APR tests each bison that enters the population for cattle gene introgression using Single Nucleotide Polymorphism (SNPs) technology. To increase allelic diversity, APR plans to begin importing bison from other sources in the future, provided that every imported animal tests negative for cattle introgression. As the herd increases, APR plans to begin

shifting focus from growing the population for the preservation of genetic diversity to increasing that genetic diversity through supplementation from various and diverse herds.

Size and Habitat of the Restoration Area: APR currently owns and/or leases more than 305,000 acres of deeded and public land. Additionally, the ranches APR has purchased have historically held grazing privileges on more than 63,000 acres in the Charles M. Russell National Wildlife Refuge. Currently APR holds 25 AUMS within the CMR on lands that are directly adjacent to APR lands. The bison are allowed to cross this jurisdictional boundary. The U.S. Fish and Wildlife Service policy is to use various management tools on these Refuge lands, including resting habitat units, to promote healthy plant and wildlife habitat conditions.

APR will continue to purchase strategic private lands that can be linked to existing public lands in order to provide the best possible habitat for wildlife. APR's goal is to purchase private land across a broad area in order to reduce habitat fragmentation and enable the area's wildlife to range unimpeded in a large landscape. This approach is particularly beneficial to animals that undertake far-ranging migrations each year, such as pronghorn. By placing deeded lands into conservation easements over time, APR seeks to ensure the conservation of this land in perpetuity. APR generally does not cultivate nor build on its properties with some exceptions such as the newly constructed Enrico Education and Science Center.

The APR consists primarily of shrubland, steppe, and savanna habitat but also includes some riparian and wetland sites.

Ecological Interactions: Livestock bison on APR and public lands interact with native ungulates and other native prairie species. APR's approach to biodiversity restoration is built around the *Freese Scale for Grassland Restoration*. This scale can be used by land managers trying to achieve a balance between agricultural production and biodiversity as well as those, like APR, which are solely focused on maximizing native prairie biodiversity (Fresse et al., 2014). The Freese Scale is a 7-point scale that evaluates land management based on 10 ecological conditions that have been most effected by human activities. At one end of the scale is commodity management, which describes activities like grain or cattle production that are common in the APR region. At the other end of the scale is biodiversity management, which represents ecological conditions that would be in place when biodiversity conservation is the primary goal for the land. The result is a scale that tracks the effects of different management decisions on ecological conditions, providing APR with a tool to assess progress as it transitions land from a primary focus on livestock and grain production to a focus on biodiversity. Over 150 species of birds use the APR and the reserve is part of an ongoing study assessing the impact of bison grazing on bird diversity. APR deeded land supports a variety of other wildlife including prairie dogs, pronghorn, and big horn sheep.

Historical Presence of Bison: This portion of Montana is within the species' historical range. The APR was a site that historically had a high density of bison. The historical

occupation of bison within the region is preserved in the numerous skeletal remains and horn sheaths that are still present in the region (Knowles, 2001).

Current Uses of the Restoration Area

Recreation: APR has developed a recreation experience that is free and open to the public. APR offers opportunities for hiking, horseback riding, biking, camping, bird watching and hunting. APR's domestic bison are able to roam in all areas of the current occupied unit including public campgrounds and all viewing and hiking areas. To date, there have been no bison-human conflicts. There are interpretive and science education signs on the Reserve to improve visitors' experiences by providing information on topics such as wildlife and regional history.

APR is supportive of hunting and has enrolled a large portion of its deeded land in FWP's Block Management program to allow public hunting. Bison roam in parts of these Block Management Areas. Two parcels managed by APR have conservation easement-access agreements with FWP. Another parcel is under easement with the Montana Land Reliance. A key tenet of the APR mission is public access, and thus APR plans to maintain access for a variety of public uses. Both the public and private lands that comprise APR will be managed to provide a quality outdoor experience for the general public.

Grazing Agriculture: Livestock currently use portions of APR lands. Livestock stocking and grazing management decisions are at the discretion of APR and the appropriate land management agencies. Range assessments are conducted to ensure current cattle and bison stocking rates are compatible.

APR and WWF conducted a joint study, funded by the Murdock Foundation, comparing the movements, landscape use and ecological impacts of the APR bison herd on neighboring cattle herds. APR has also partnered with University of Montana graduate students and WWF to conduct a comparative study of bison and domestic cattle water use. GPS radio collars were placed on both species in order to accurately monitor their respective movements and ecological impacts at both APR and Grasslands National Park, Canada (Kohl et al. 2013). Bison and cattle differed in all behaviors such as grazing, standing, bedding and moving. Cattle spent a higher proportion of time grazing (45–49%) than bison (26–28%) and increased time at water. Bison moved at a 50–99% faster rate than cattle. Cattle selected for high plant biomass, whereas bison selected for intermediate plant biomass.

Socio-Political Environment: There is already a great deal of landowner and local community concern about changes in landownership in northeastern Montana, changes in federal programs such as a possible National Monument designation, reduction of livestock grazing on the CMR, changes in water rights, and state programs such as the transfer of quarantine bison to Fort Peck. A recent study of perception of land use changes in Phillips County found three main sources of conflict in the region stemming from: 1) the recent growth of APR; 2) the recent changes in federal land management that are reflective of shifting state and national priorities on conservation; and 3) differing perceptions of what constitutes prairie conservation (Raicovich, 2012).

Phillips County, where the majority of APR properties are located has a resolution (2015) against FWP or the USFWS translocating bison into the county and another resolution (2010) declaring all bison within the county to be considered livestock. A smaller portion of APR lands fall within Valley County borders where the Conservation District passed an ordinance calling for a permit in order to authorize grazing of bison in the district for the protection of soil and water resources. A number of counties in eastern Montana have passed ordinances to prevent any bison translocations into their counties without local government approval. Bison present on APR lands at this time are classified as bison.

As of 2013, APR had spent \$24.5 million in the local community, including land purchases, tourism, equipment, supplies, payment to contractors, wages for local staff, real estate tax, and other reserve management costs. In 2013, local spending excluding land payments totaled \$1.2 million. APR pays real estate taxes on all of its deeded lands as well as taxes on personal property. APR is now one of the top tax payers in Phillips County.

Skepticism towards this project was originally high from surrounding landowners. Detailed agreements were secured between APR and landowners to ensure 'good neighbor' practices were maintained relative to herd containment, disease management, etc. Since the first five years of project implementation the need for these agreements has become less and in many cases unnecessary altogether (S. Gerrity, APR, pers. comm., 2015). However, mistrust and skepticism remain among other landowners in north central and northeastern Montana as evidenced by editorials and documentaries on APR that try to describe both sides of the issue.

Landowner Incentives: There are currently no landowner incentive programs pertinent to this case study as APR is the landowner and the owner of the bison.

Reduced Risk of ESA Listing: While the current bison herd is large enough to likely be genetically viable it is classified and managed as livestock and therefore is not pertinent to a listing decision for wild bison.

Funding/Costs: Trackable costs to manage the bison herd on APR indicate a total annual cost of less than \$50,000. APR staff that manage the bison herd have other duties on the preserve and some staff such as the lead scientist work only part time on bison related projects. Start up costs to initiate the program were considerably more but the current hands off approach to herd management is much less. Extreme weather conditions requiring herd hazing or research projects for herd monitoring result in costs not considered annual expense (S. Gerrity, APR, pers. comm., 2015).

3.5 Alternative #3: Restoration of a Publicly Managed Bison Herd on Tribal Lands

A tribal entity would be identified who is willing to negotiate with FWP through an MOU for specific management responsibilities of publicly managed bison. Tribal sovereignties and culture would be respected and bison would be restored to Indian Country providing opportunities to restore and strengthen cultural connections to bison. Bison hunting and viewing access would have to be allowed within tribal lands boundaries. Implementation of this alternative could be done at various scales, i.e., small or large herd. Implementation at any scale would follow the guidelines above.

Bison would interact with existing native wildlife and ecological processes. Agreement between FWP and the tribal entity could specify direction about land management activities. Hunting for tribal and non-tribal members would have to be allowed. Hunting program details would have to be agreed upon by FWP, tribal entities and a citizen working group. FWP and the tribe would have to clarify if any financial incentives for allowing public access would be appropriate or desired. Cultural benefits from tribal hunting would include consumption of bison and revenue sharing.

Livestock stocking and grazing management decisions would be at the discretion of the tribe. All bison moved to tribal land would have to be certified free of reportable diseases as determined by the MDOL and state veterinarian. Disease monitoring and response protocol for potential disease outbreaks would be coordinated by MDOL and state veterinarian and followed by tribal landowner.

A piece of land large enough to support an initial release of 40 bison would be sought. The tribal landowner(s) would be held to managing their land to the best of their ability to maintain the herd within agreed to MOU terms (catastrophic events notwithstanding.) Herd composition and population goals appropriate to the site would be determined by FWP, tribal entity, and a citizen work group. The herd plans would have to be in accordance with Montana and tribal laws. Habitat assessments would be negotiated within the MOU terms to address range capacity on an annual basis including all seasonal use.

3.5.1 Case Study #1 for Restoration to Tribal Lands: Tribal Herd in the Book Cliffs Wildlife Management Unit, Utah

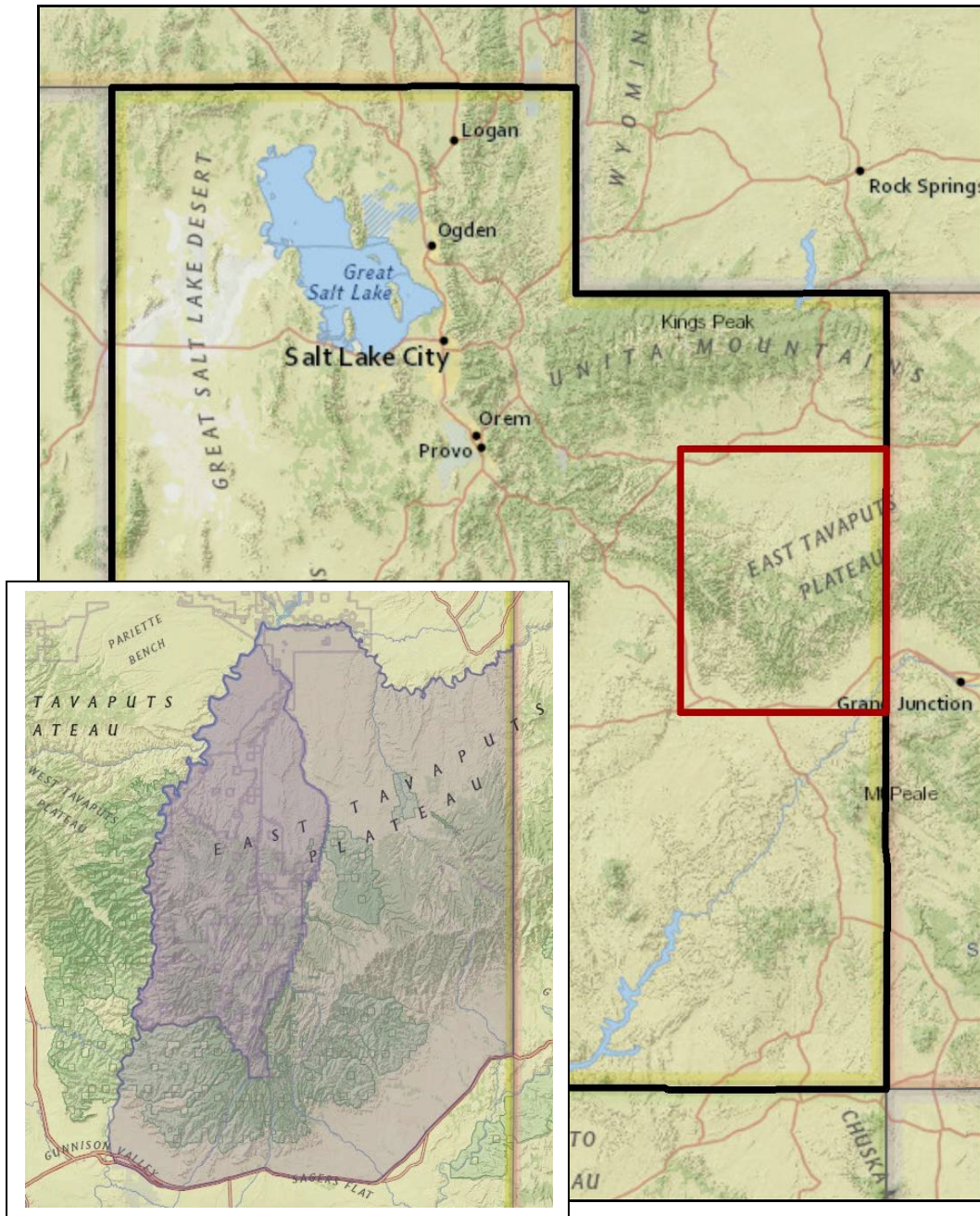


Figure 7. Area of Utah where the Book Cliffs bison herd is managed. The tribal herd is managed within the darkest shading which represents the Uintah and Ouray Reservations.

Primary Objective(s) for Bison: The Book Cliffs bison herd is managed for long term population persistence, genetic conservation, as a source for other conservation

populations, and for hunter harvest (DOI, 2014). The herd consists of two populations or sub-herds. The sub-herds are managed to some extent as separate entities based on the area of use and 'ownership' of the bison. The sub-herds include a public herd that resides primarily on public land and a tribal herd that resides primarily on tribal land.

Ownership of Bison: Bison on the Uintah and Ouray Reservation are owned by the Ute Tribe and classified as wildlife. Bison on the public lands of the Book Cliff Wildlife Management Unit are classified as wildlife and managed by the state of Utah.

Jurisdiction/Agency Responsibilities for the Tribal Herd: The Ute Tribe has jurisdiction and management responsibilities for any Book Cliffs bison found on tribal lands. The Book Cliffs public bison herd is managed by the Utah Division of Wildlife Resources (UDWR). The public bison herd moves between public land and the Ute Tribal land and tribal bison move to the public herd area as well. As bison move between public and reservation lands, the management of the bison shifts between the UDWR and the Ute Tribe (D. Mangus, UDWR, pers. comm., 2014). The BLM and the School and Institutional Trust Lands Administration (SITLA) also have cooperative jurisdiction due to the public lands within the area. The Federal Land Policy and Management Act of 1976 gives BLM the authority to manage non-wilderness lands for multiple uses including fish and wildlife conservation but the state retains jurisdiction over managing resident wildlife populations.

Herd Details and Management of the Herd on Site: The tribal herd was initiated with the reintroduction of six bison onto the Uintah and Ouray Reservation in 1986 (UDWR, 2007a). Through additional introductions from a variety of sources in addition to natural growth the herd has grown to 800-900 animals as of 2011, though the stated objective is 450 bison (DOI, 2014). The tribe manages the population through hunting permits.

The UDWR implemented the Book Cliff's Conservation Initiative in the 1990s. Initiative lands were secured through private land purchases in cooperation with the Rocky Mountain Elk Foundation and The Nature Conservancy. These lands and the associated grazing permits were made available for wildlife conservation purposes. Some of the grazing privileges were shared with surrounding landowners as encouragement for them to adjust their own grazing practices to enhance wildlife habitat. In 2006, following the movement of tribal bison onto these public lands, the North Book Cliffs Bison Planning Committee (committee) was created to examine the potential of reintroducing a public herd to the Initiative lands. The committee was made up of a diverse collection of public agencies, private landowners, and interest groups (UDWR, 2007a). The committee established management goals and reintroduction plans. The state herd was established in 2009 with 44 bison (30 from the Henry Mountains, 14 from Ute Tribe Trust Lands) and was supplemented in 2010 with 40 more bison from the Henry Mountains (DOI, 2014). The public herd is currently around 140-150 animals. These animals were hard released on site and have remained in the area of that release.

During the summer grazing season the public and tribal herds are generally separated onto the respective land management units. During the winter months, the public herd typically grows by 200-300 bison as tribal animals move to public lands. While mixing is the result

of unfenced bison herds, some fences do exist in the area to manage livestock movement. Generally, distribution and abundance of the herds is maintained by a combination of tools with hunting and hazing being the primary ones.

The UDWR has developed a cooperative agreement with the tribes in order for the tribe to have some hunting privileges on the public land, in addition to the tribal lands. The tribes receive 25% of any permits issued by UDWR to use on lands which were once included in the reservation.

All bison moved to the area were tested for brucellosis, tuberculosis, and trichomoniasis before transfer to the Book Cliffs. No evidence was found of any of these diseases. When the public herd population reaches the appropriate level to allow for hunting, hunter test kits will be used to monitor the herd for disease. UDWR will continue annual disease testing through capture efforts with a minimum of 15 cow bison captured and tested annually for brucellosis (DOI, 2014). As of 2015, no diseases of concern have been identified with the public herd (D. Mangus, UDWR, pers. comm., 2014). Annually the tribes round up and test 300-400 bison for disease exposure. To date no diseases of concern have been identified.

Some genetic testing of bison was completed before bison were brought from the Henry Mountains. No cattle introgression was noted in these animals. The source bison for much of the tribal herd were from animals that do have low levels of cattle introgression (DOI, 2104).

Size and Habitat of the Restoration Area: The Book Cliffs Wildlife Management Unit (BCWMU) consists of approximately 2.1 million acres within Utah's Uintah and Grand counties, which are managed as BLM lands, Native American Trust Lands, and State of Utah Trust Lands. The BCWMU is divided into three subunits. The Book Cliffs bison herd is managed on the Bitter Creek and Little Creek subunits, which consist of approximately 1.47 million acres, of which 5% is private land, 35% is Ute Tribe Trust Land, and the remaining 60% is BLM, UDWR, and State Trust Lands (UDWR, 2007a). The region of the BCWMU containing the bison herds varies in elevation from 7,500 to 9,000 feet, and is part of the arid Colorado Plateau ecotype consisting of pinyon-juniper shrub-steppe habitat. The vegetation consists of oak brush and sage, with some aspen and conifers (D. Mangus, UDWR, pers. comm., 2014).

Ecological Interactions: The bison share the range with multiple native ungulates, including elk, mule deer, and pronghorn (DOI, 2104). The state uses prescribed fire, mechanical treatments, and reseeds burned areas to improve habitat for grazers. The habitat changes in the area are not directly attributable to bison, but are a result of long-term use of the area by a variety of animals and domestic livestock. The annual budget for habitat improvements within the Book Cliffs has been \$400,000-500,000 per year since bison introduction. Additionally, \$80,000-100,000 is spent on tribal land habitat projects each year. Not all of the projects are specifically directed at bison, but many of the projects benefit bison as well as the other species. This area is a high priority area for habitat improvement for both deer and elk populations. The state has not reduced hunting tags for

any other species as a result of the presence of bison, nor have species populations decreased due to the presence of bison.

Historical Presence of Bison: The Tavaputs Plateau northeast of the Book Cliffs is within the historical range of Plains Bison but probably did not sustain high population densities due to the lack of water, a short growing season, and dense forest (DOI, 2014). Evidence that bison were found in the Book Cliffs area historically has been identified through fossil records and bison skulls located in the area (Book Cliffs Management Plan, 2007).

Current Uses of the Restoration Area

Recreation: Bison can be viewed and accessed from public roads throughout the Book Cliffs area. About 200 tribal bison are harvested annually on tribal lands by tribal and non-tribal members. Permits for non-tribal members are auctioned with proceeds of about \$2,500 per permit used to fund tribal schools and scholarships. The management plan for the public herd calls for public hunting to be the principal population management tool, though it is believed that drought will impact reproduction rates (UDWR, 2007a). The management plan states that if bison move beyond the BCWMU, they may be considered nuisance wildlife (UDWR, 2007a). A limited harvest has been undertaken to remove bison from a temporary range that extended to agricultural lands outside the Book Cliffs (DOI, 2014); 25 permits were issued and 23 animals were taken during this hunt in 2014. Depredation hunts will continue to be used to manage distribution as hunting pressure by state and tribal hunters can be targeted in problem areas when needed.

To date there have been no human safety issues. Recently a gravel county road has been paved that traverses the Book Cliffs area. The state and others are actively assessing how to address wildlife crossing issues associated with this road.

Grazing/Agriculture: There is overlap between the range use of bison, cattle and sheep as private grazing allotments are still maintained on the BCWMU (DOI, 2014). There are no sheep on tribal lands but cattle and feral horses are present. In the North Book Cliffs area where the publicly managed bison spend the majority of their time, there are two livestock operations that run 1,000-1,500 cow/calf pairs. Sheep are grazed at lower elevations on the far northern and southern ends of the public lands with little overlap with bison. There have been no complaints of livestock fence damage from the bison. Fence damage that does occur is often attributed to elk in the area.

The UDWR, with the help of the committee and sporting groups, completed cooperative range and habitat improvement projects on approximately 114,555 acres of primarily public land between 2002 and 2007, and plans to continue to implement range improvement projects (UDWR, 2007a). The UDWR and sporting groups have also purchased lands and made those grazing allotments available to wildlife, including bison (D. Mangus, UDWR, pers. comm., 2014). This has reduced the conflict between bison and livestock.

UDWR works with landowners and third parties to resolve conflicts that develop between bison and livestock interests (DOI, 2014). Water availability is the biggest concern (DOI,

2014) and the UDWR committed to local landowners that it would assist with water development to address concerns. The UDWR, together with sportsmen and women, and livestock producers have worked on water development in the area. The BLM and UDWR have used funding from bison conservation permit dollars to assist with these developments on public lands.

Socio-Political Environment: Support from both tribal entities and hunters has been noted for bison programs in the area. There have been concerns over some aspects of management, most notably, how to allocate damage hunt permits. A cooperative agreement to resolve tension over this issue was developed and is under consideration by the tribes.

During initiation of this program there were concerns regarding lost grazing privileges, conflicts between bison and livestock, and human safety. The North Book Cliffs Bison Planning Committee examined the potential for reintroducing a public herd to the region while minimizing conflicts. The committee established management goals and reintroduction plans and worked closely with landowners and grazing permittees in the area to minimize conflict.

Landowner Incentives: Incentives to the tribal entities with the tribal herd include a re-connection with a native species and hunting opportunity on tribal lands. Additionally, the cooperative agreement between UDWR and tribes resulted in additional hunting opportunity for tribal members on public land. The tribes receive 25% of any permits issued by UDWR to use on lands which were once included in the reservation. Culling of the tribal herd to control population growth may provide financial incentives to the tribal entities if a market can be secured for the bison.

Private landowners within the area are eligible for UDWR funded habitat improvement work on their lands. Landowners are also eligible to participate in Utah's program that allocates deer, elk, and antelope tags to landowners that can be sold to hunters for private profit. Any profit from the sale of tags must be used to cover damage from wildlife before a landowner could seek compensation from the state.

Reduced Risk of ESA Listing: As some of the source bison for this program came from herds with some level of cattle gene introgression these animals would likely not be considered in ESA listing considerations.

Funding: This restoration effort is funded with a combination of state, tribal and public funds. The track-able annual costs for bison management by the tribes is around \$100,000. As stated previously there is significant spending on habitat projects. These projects, however, are not solely attributed to bison management. Specifically, \$80,000-100,000 is spent on tribal land habitat projects each year. Much of the staff time for management, monitoring, and other activities are included in the day to day general wildlife duties of UDWR staff. When feasible, bison are monitored along with elk, deer and other wildlife. Every three years the UDWR collects a complete inventory of bison but this information is gathered in conjunction with elk monitoring.

3.6 Alternative #4: Restoration of a Publicly Managed Bison Herd on a Large Landscape Where there are Minimal Conflicts with Livestock (Large Herd Alternative)

Bison would be restored to a large landscape in Montana where there is minimal competition with livestock; either the area has not had domestic livestock allotments, the allotments are no longer active, or there are minimal allotments. Bison herd size would be determined by range capacity with a conservative stocking rate. Implementation of this alternative would be at a large scale. The difference between #2 and #4 is the idea of program size and the level of competition with domestic livestock. This alternative would be implemented on a large scale to restore a herd of more than 400 bison in an area where livestock conflict is minimal. An initial soft release of 40 animals could be used to start this restoration effort. Restoration on a large landscape could make management and/or response to problems more complex.

Agreements between FWP and private/public/tribal landowner(s) could include specific direction about land management activities. The project should provide noticeable ecological benefits and bison would have the ability to interact with existing native wildlife. Hunting could be used as a management tool and should offer maximum opportunity for public and tribal hunters. Hunting program details would have to be agreed upon by FWP, landowner(s), and the citizen working group. No loss of grazing would be anticipated but is possible depending on willingness of the landowner(s). Forage analyses would be needed (§87-1-216 MCA).

3.6.1 Case Study #1 for Restoration to a Large Landscape Where there are Minimal Conflicts with Livestock: Canada's Pink Mountain Herd

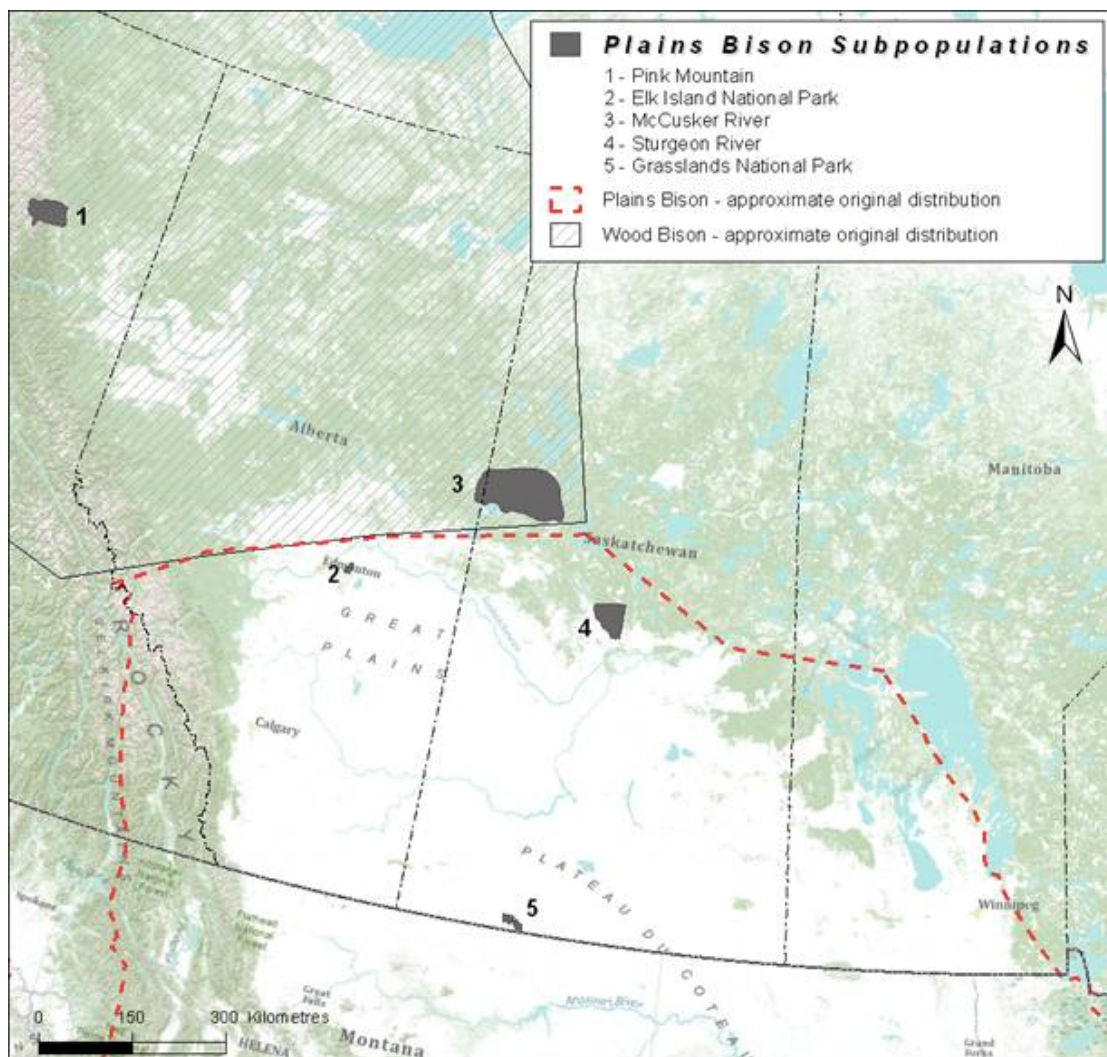


Figure 8. Area of Canada where the Pink Mountains bison herd is managed, i.e. #1 in the far northwest corner of the map, British Columbia.

Primary Objective(s) for Bison: This herd was established through an unintentional escape of domestic bison. Regardless, the objective for this herd now is to maintain hunting opportunity while minimizing range expansion. This herd has expanded in the past and numbers and distribution are now managed through hunting. The numerical objective is 1,000-1,200 animals based on estimates of what the range could support.

Ownership of Bison: The bison are managed by the Provincial government and under public ownership.

Jurisdiction/Agency Responsibilities: The Plains Bison of the Pink Mountain herd are managed at the provincial level by the British Columbia Ministry of Forest Lands and

Natural Resource Operations. The herd is located within Treaty 8 territory. Management is coordinated with Treaty 8 First Nations (collaborative management) but final authority stays with the Province.

Herd Details and Management of the Herd on Site: This herd was established in 1971 when 48 privately owned Plains Bison originally purchased from Elk Island National Park escaped (COSEWIC, 2013). Since the captive herd escape, the population has grown substantially with the 2014 inventory finding a total of 1,020 animals including 629-699 mature adults (COSEWIC, 2013). The population has declined slightly from the 2006 inventory of 1,302 bison due to aggressive, liberal hunting and predation. The harvest target rate was adjusted from 10% to 16% after the 2006 inventory (COSEWIC, 2013). The herd is managed to control population growth and range expansion, given its proximity to Wood Bison subpopulations in northeastern British Columbia. The Pink Mountain herd is the most demographically robust unit of Plains Bison in Canada (COSEWIC, 2013).

These bison are not fenced nor contained in any way. They exist in a special management area with their distribution being controlled primarily through hunting and some minimal hazing. Future plans are to continue this approach to avoid the chance of contact with Wood Bison and domestic bison in other parts of the province. There was initially a drift fence on the perimeter of the area to encourage bison to avoid some limited private lands. The fence has not been maintained.

There were animal exclosures established after an initial range survey in 1993 to monitor forage use by bison and other wildlife in the area however these have been only sporadically monitored. There are some areas where bison are having a negative impact on the range due to population numbers and grazing practices (Alicia Woods, pers. comm., 2014.)

Currently there is no disease testing program for this herd but there is no evidence that these animals have been exposed to any diseases of concern (COSEWIC, 2013). As the source bison for this herd came originally from Elk Island, a herd free of cattle gene introgression, these animals are considered free of introgression as well.

Size and Habitat of the Restoration Area: The herd ranges in a 3,200km² area in the upper Sikanni and Halfway river valleys that are mostly 'Crown' lands or public land (COSEWIC, 2013). The habitat consists primarily of sedge meadows and grasslands.

Ecological Interactions: The herd is subject to a full range of natural ecological processes, including disease and native predators (COSEWIC, 2013). Wolves are the main predators of northern bison, but bears and wolves both prey on bison calves (British Columbia Ministry of Environment, Lands and Parks, 2000). The area that is occupied by bison also contains moose, elk, stone sheep, goats, caribou, mule deer, and white-tailed deer. To date, conflicts between these species have been minimal with the exception of stone sheep conflicts. Bison use alpine areas that are blown free from snow when deep snow or environmental conditions in other places force them to seek open ground. Stone sheep and possibly caribou also use these windblown areas resulting in competition among the species. There

has been a program to distribute salt to lower elevations to encourage bison to avoid the alpine areas but these lower elevations are used by wintering elk. Winter range for elk is currently not a limiting factor but could be in the future depending on population levels.

Historical Presence of Bison: This herd is outside the historical range of Plains Bison but is located in the original range of Wood Bison (COSEWIC, 2013).

Current Uses of the Restoration Area

Recreation: Hunting, fishing, outdoor recreation, snowmobiling, and ATV use occur within the herd area. The population size and distribution is managed through regulated hunting to confine it within a management area and target population range (COSEWIC, 2013). This program produces license revenue to support management programs, plus meat for successful hunters (British Columbia Ministry of Environment, Lands and Parks, 2000). Approximately 300-550 permits are issued annually depending on the status of the population. The target harvest rate has been maintained at 16% of the population in recent years in order to reduce numbers. Overall hunter success ranges from 30-40%. Hunts are segmented into two-week intervals to distribute hunting pressure. Bison have responded to hunting pressure by changing their distribution to areas where the season has closed and by avoiding humans. Currently there is a shared permit system to lessen hunter congestion. Under this system a group of four hunters are allowed to harvest two bison with any of the permitted individuals in the party allowed to kill the animal.

Salt blocks are used in the winter to encourage bison to stay off the highway (COSEWIC, 2013). The range where this herd resides does receive use by off highway vehicles and snowmobiles and, as it is hunted, it may be more sensitive to disturbance by vehicles and human presence (COSEWIC, 2013).

Grazing/Agriculture: There is a domestic bison herd in the general vicinity of this population (COSEWIC, 2013). The only livestock located in the area are horses associated with a guide/outfitting operation. There have been conflicts between bison and horses when horses were being fed or were at salt stations. This situation was addressed by changing some livestock management practices as well as hazing bison from the area of conflict.

Private and Public Land Use: A limited amount of resource extraction activities including logging, oil, and gas extraction occur in the area. There is very little private land in the area. There have been minimal conflicts with these uses in the area as the area is very remote with limited access. Some buildings on private land have been fenced to deter bison.

Socio-Political Environment: The bison are supported by the hunting community. Drawing a permit to hunt bison in this area is very difficult with the odds of success being only 25-30:1.

Landowner Incentives: The Provincial Department of Agriculture has some programs to minimize wildlife damage, i.e., stack yards. However, because so few livestock use this area

there has been limited use of these programs. There was a stack-yard fencing project on private land to exclude bison from stored hay and there was also a drift fence established on the margin of the management area to encourage bison to avoid private lands on the edge of the management area.

Reduced Risk of ESA Listing: This population is the largest free ranging Plains Bison population in Canada. Because there are very few other Plains Bison populations, the COSEWIC assessment of the status of Plains Bison in 2013 recommended a threatened status for this animal in Canada.

Funding: There are habitat maintenance programs in this area that use prescribed burns to benefit wildlife in general. This maintenance program costs about \$100,000 (CAD) annually with approximately \$10,000 (CAD) directed specifically at bison habitat every 2-3 years. The salting program is currently unfunded, but costs between \$5,000-10,000 (CAD) per year when active. The inventory costs for population assessment in 2014 were \$40,000 (CAD).

3.6.2 Case Study #2 for Restoration to a Large Landscape Where there are Minimal Conflicts with Livestock: Alaska's Wood Bison Herd

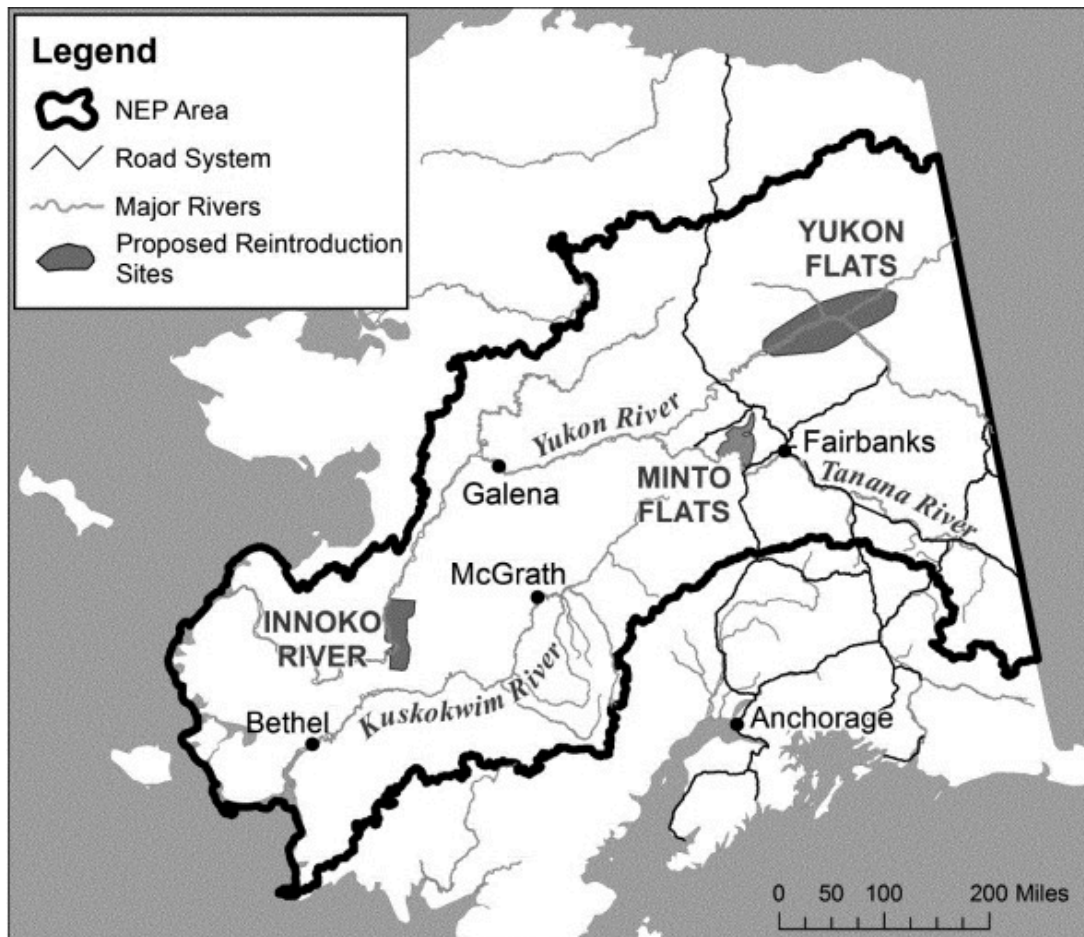


Figure 9. Area of Alaska depicting the overall Nonessential Experimental Population (NEP) area as well as the three proposed restoration areas for Wood Bison.

Primary Objective(s) of Bison Program: The goal of the Alaska Wood Bison restoration project is to establish one or more free-ranging populations within the state. Restoration would be followed by a long term monitoring and evaluation process to determine feasibility of establishing additional populations (50 CFR Part 17). The objectives of the Alaska reintroduction effort include; (1) restoring a key indigenous grazing animal to northern ecosystems; (2) restoring biological and habitat diversity and natural processes; (3) increasing the total number of Wood Bison in free ranging, disease-free herds, thereby enhancing the overall survival of the species in the wild; (4) providing a regulatory framework that allows for sustainable development, including opportunities for local tourism, hunting and guiding businesses; and (5) re-establishing the historical cultural connection between bison and Alaska residents (50 CFR Part 17). The restoration would also provide an opportunity to monitor the long-term ecological effects of a large grazing mammal as global climate change occurs, possibly shifting northern ecosystems toward grasslands (Alaska Department of Fish and Game, 2013).

Ownership of Bison: Any Wood Bison restored through this program would be managed by the Alaska Department of Fish and Game as wildlife and under public ownership.

Jurisdiction/Agency Responsibilities: The *Final Rule for the Establishment of a Nonessential Experimental Population of Wood Bison in Alaska* directs that the Alaska Department of Fish and Game (ADFG) will have primary management responsibility for leading and implementing a bison restoration project (50 CFR Part 17). The United States Fish and Wildlife Service (USFWS) will coordinate with ADFG on restoration efforts. Site specific management plans will be developed for each area by ADFG with the involvement of landowners and other stakeholders (50 CFR Part 17).

Herd Details and Management of Herd on Site: Bison restoration began at the Innoko River site in 2015. About 100 bison are being used for reintroduction from the Elk Island Wood Bison herd. The ultimate goal is to re-establish wild Wood Bison populations in Alaska with founding animals that are as genetically diverse as possible (50 CFR Part 17). The ADFG evaluated areas that would support at least 400 animals, but recognizes that larger populations are more effective in preserving genetic diversity over the long term. Rather than setting minimum population objectives for each reintroduction area during the development of the EA or the 10(j) rule, ADFG will develop science-based population objectives for each area through public management planning efforts to address site-specific conditions. The hope is that any herd will grow about 20% per year to a population of 400-500 animals; big enough to sustain itself while providing some harvest for subsistence and sport hunters (Mowry, 2014). The areas where reintroductions are occurring and being considered can support populations ranging from about 400 to 2,000 animals (ADFG, 2013). The Lower Innoko/Yukon River site specifically has a potential carrying capacity of more than 400 bison and is the first target area for restoration (ADFG, 2013).

In conformance with recommendations of bison geneticists and conservation biologists, a minimum of 100 captive-raised Wood Bison will be released at a single site within the area in the first year of the program. A similar number may be released at each of two additional sites in subsequent years (50 CFR Part 17). A temporary holding facility consisting of a small corral with a supply of hay will be provided at each release site. Ideally, bison will be transported to the site in late winter or early spring and held for some period to allow them to acclimate to their new location and to ensure that the release date coincides with the emergence of spring forage (50 CFR Part 17). Once the bison are released the temporary holding facilities will be dismantled.

Most of the transplant stock would be young animals, which are easier to transport. Some older cows would be included to help maintain social behavior and protect younger animals from predation. The sex ratio of release animals is to be 1:1 (ADFG, 2013). Experience in managing other bison herds and population modeling indicate that founding populations of at least 40 bison could grow to approximately 400 animals in 10–15 years (50 CFR Part 17). The range use by herds is closely linked with population size and habitat quality. Wood Bison show a strong fidelity to seasonal ranges (ADFG, 2013). A population of about 500 Wood Bison would be expected to remain within an area of 500 square miles

or less (ADFG, 2013). In habitats like those being considered for restoration, bison populations typically do not expand their distribution until population densities reach 1.5-2 bison per square mile (ADFG, 2013).

ADFG, the USFWS, and restoration program cooperators will evaluate the success of each reintroduction effort and apply any lessons learned to subsequent efforts, thereby increasing the efficiency and long-term success of restoration efforts in Alaska (50 CFR Part 17). Biological data necessary for long-term bison management will be obtained from annual spring population surveys, fall or winter composition counts, and the monitoring of herd movements. (50 CFR Part 17). The ADFG will use radio telemetry and satellite collars to monitor bison. If a reintroduction effort fails, or in the unlikely event that litigation changes the legal status of bison, the animals may be removed from the area (Alaska Wood Bison Management Planning Team (AWBMPT), 2015). Forage assessments will be conducted to monitor the impact of the herd on its habitat (AWBMPT, 2015). The herd will be closely monitored and conservatively managed during the initial years to better understand how well the herd adapts to its new surroundings and weather events that will likely include occasional deep snow and flooding (AWBMPT, 2015).

There is currently no plan for containment nor need for dispersal management. Cooperators feel the area contains enough habitat and available forage, to maintain the herd within the target area. While plans are being developed for range land monitoring; details have yet to be specified.

All of the potential source bison have been subject to rigorous disease-testing and are certified as free of diseases of concern (50 CFR Part 17; AWBMPT, 2015). Any bison slated for release would be tested for disease by veterinarians before being shipped from the source herd location and also at a holding facility in Alaska before being released (Mowry, 2005). ADFG will continue to obtain samples for disease testing as opportunities arise in connection with future capture efforts or harvests. In the unlikely event that a disease outbreak posing a significant threat to Wood Bison, other wildlife, or humans were to occur, the situation would be addressed through appropriate management actions, including vaccination or other veterinary treatment, culling, or removal of an entire herd, as described in the EA. (50 CFR Part 17)

Size and Habitat of the Restoration Area: Initially, Wood Bison will be held in a temporary corral, and then released on state or private lands. Following release, bison could roam onto other public or private lands (ADFG, 2013). The Yukon Flats south of the Brooks Range, the Minto Flats northwest of Fairbanks and the Innoko River country in northwestern Alaska are the three sites selected for restoration (Mowry, 2005). The sites have been identified based on intensive evaluations of potential habitat conducted in seven areas in central Alaska between 1993 and 2006. Suitable release sites must: (1) support a minimum population of 400 bison, (2) be separate from areas inhabited by Plains Bison, and (3) not have conflicting land uses such as agriculture (50 CFR Part 17).

Continued concerns about potential management requirements under the 10(j) NEP classification compelled the ADFG to identify the lower Innoko/Yukon River area as the

most appropriate of the three potential release sites to initiate the restoration project. Local communities have strongly supported the idea for at least a decade and no large-scale economic development projects have been identified within the area (AWBMPT, 2015). The Lower Innoko/Yukon River site includes at least 1,300 square miles of bison habitat made up of 51% private, 48% Bureau of Land Management, and 1% state lands (ADFG, 2013).

The Lower Innoko valley is characterized by numerous lakes and semi-permanent wet lands and is drained by the Yukon and Innoko rivers. The Lower Innoko River area is primarily an “open wetlands system, and most water bodies are subject to changes in water levels and chemistry as a result of spring flooding in the Innoko and Yukon rivers”. Extensive sedge and grass meadow systems cover 7.6% of the area.

Ecological Interactions: Evidence from Canada and elsewhere indicates that there is little competition between Wood Bison and other species. Similarly, in Alaska, Plains Bison coexist with moose with no evident problems (50 CFR Part 17). ADFG could remove or eliminate any restoration bison if monitoring indicates appreciable harm to other native wildlife; i.e., the introduction of disease or other unanticipated environmental consequences associated with their presence (50 CFR Part 17). ADFG has decades of experience with the Delta, Copper River, Chitina, and Farewell Plains Bison herds. Wood Bison have occupied similar boreal forest ecosystems in Canada for thousands of years, with several reintroduced herds occupying the landscape for recent decades. No significant adverse ecological impacts due to the presence of bison of either subspecies have been documented, suggesting that adverse effects are not likely to occur as a result of Wood Bison restoration (ADFG, 2013). The management plan requires that Wood Bison interactions with their habitat and other species be monitored (AWBMPT, 2015).

Historical Presence of Bison: The proposed restoration sites are within the estimated range of Wood Bison during the last 5,000 years (ADFG, 2013).

Current Uses of the Restoration Area

Recreation: The proposed reintroduction areas consist of state, federal, and private lands in interior Alaska. Reintroduction of Wood Bison would not have any significant effect on recreational activities within the area. (50 CFR Part 17). There should not be adverse impacts to Wood Bison in the Nonessential Experimental Population area from hunting of other species, furbearer trapping, or other recreational activities such as boating, snow machining, off-road vehicle use, camping, fishing, firewood cutting, berry picking, or logging. (50 CFR Part 17).

Regulated harvest is considered one of the primary management tools for conservation of the species (50 CFR Part 17). Regulated bison hunting has been used to: (1) maintain herd size within the carrying capacity of the landscape; 2) reduce the potential for the spread of disease; (3) address public safety concerns near roads; and (4) increase community support for re-established Wood Bison herds. Where hunting is allowed, it can lead to increased revenue for monitoring and management of the herds. (50 CFR Part 17). Sustainable levels of hunting of Wood Bison in Alaska will serve some of these same

purposes, including securing the support of project sponsors, e.g., ADFG, local communities, landowners, and nongovernmental organizations involved in the project (50 CFR Part 17). Reintroduction of Wood Bison to Alaska depends heavily on this support, including provisions for hunting as a future management option. Moreover, provisions for future regulated hunting will assure landowners and development interests that the reintroduction of Wood Bison will not interfere with natural resource development or other human activities. (50 CFR Part 17). Though it will probably take several years, the plan for the herd is to support both subsistence and sport hunts. A herd of 500 bison should be able to support a harvest of about 50 bison a year, based on a 20% annual growth rate (Mowry, 2005). One objective of the management plan is to ensure that harvest does not prevent growth and expansion of Wood Bison into adjacent areas where suitable habitat exists (AWBMPT, 2015).

Grazing/Agriculture: There is currently very minimal livestock grazing within the planned restoration area, so grazing is not a significant consideration. Interactions between Wood Bison and agricultural development can be prevented or minimized by managing herd size to maintain bison within the management area and away from agricultural development. Conflict could occur, however, between livestock grazing/agriculture and Wood Bison in the southeastern corner of the Minto Flats, where a few small agricultural operations exist. Such conflicts could be managed within the inherent flexibility found in the Federal rule for restoration (50 CFR Part 17). The measures envisioned by ADFG include removing bison that conflict with agricultural operations or using other actions to discourage bison use of agricultural lands (50 CFR Part 17). In the event some bison disperse to an agricultural area, it would be possible to remove the animals to prevent a pattern of use from developing (ADFG, 2013). Non harmful harassment of Wood Bison in coordination with ADFG will also be allowed in defense of property (AWBMPT, 2015). One objective identified in the management plan is to establish a cooperative effort between ADFG and local communities to develop procedures and train personnel to deal with problem bison.

Private and Public Land Use: There is resource development within the areas proposed for restoration, yet, the ADFG does not expect Wood Bison reintroductions to impede future human activities or other resource developments (50 CFR Part 17). The agency does not expect bison establishment to preclude or conflict with the development of oil, gas, or mineral resources. Nor do they expect any additional closures of roads, trails, or other recreational areas. There are no anticipated negative impacts to private landowner activities in the area (50 CFR Part 17). Wood Bison rarely attack people, and are less likely to do so than moose. The bison management plan allows for the lethal removal of bison in the defense of human life (AWBMPT, 2015).

Socio-Political Environment: In 2005, ADFG established the 'Wood Bison Restoration Advisory Group', a citizen's advisory group representing diverse stakeholders. The group reviewed the proposal to reintroduce Wood Bison, discussed the relevant issues, and provided recommendations to ADFG. The diverse group that often disagreed on topics ultimately reached consensus and recommended that ADFG move forward with Wood Bison restoration and pursue all three potential release sites (Mowry, 2005). The group

made this recommendation with the understanding that additional planning and public involvement would be needed prior to any bison release (ADFG, 2013). Once a site was chosen, a public planning process was initiated to develop and implement a management plan. Representatives from local communities, regional population centers, landowners, Alaska Native interests, wildlife conservation interests, industry, and state and federal agencies participated on the 'Alaska Wood Bison Management Planning Team' to develop the necessary management plan. The team agreed that all decisions should be by consensus. Following completion of the management plan, the team emphasized the necessity of meeting in the future to cooperatively find solutions to future challenges. The team recommended the management plan remain in place a minimum of five years to allow enough time for measuring success or failure (AWBMPT, 2015).

Landowner Incentives: The land around the Innoko/Yukon River release site is a 'checkerboard' of BLM and private Native corporation (private) lands. The Alaska Wood Bison Management Planning Team agreed that respecting private property rights is an important aspect of allowing reasonable, standardized land use for local and nonlocal residents as well as nonresidents. A land-use policy that provides a way for non-Native corporation shareholders to be able to access the Wood Bison resource was needed. In response to this need representatives of five Native corporation landowners developed a policy that allows for the collection of fees for allowing reasonable land use. The money generated from the land use fees would go into a private fund to be used for student scholarships (AWBMPT, 2015).

Reduced Risk of ESA Listing: The restoration of Wood Bison as planned in this Alaska program could eventually support a change in status for the species.

Funding: According to a preliminary cost-benefit analysis, the estimated cost for establishing a Wood Bison herd in Alaska is around \$2 million over 25 years. The final price tag would be contingent on a number of factors, including how many animals are released, where they are released and the location of the source herd (Mowry, 2005). The state has committed \$380,000 so far for releasing two groups of bison. One management plan objective is to ensure that revenue from drawing permits and application fees is used to support the management program (AWBMPT, 2015).

Due to budget shortages, ADFG recognizes it must find outside or private sources of funding to make the project viable (Mowry, 2005). Safari Club International, a hunting organization, has pledged financial support for the project; additionally the state is applying for grants from wildlife conservation agencies and groups (Mowry, 2014). The estimated benefits the state would derive from the restoration of Wood Bison is \$12 million, according to the preliminary study (AWBMPT, 2015) and these benefits would come from hunting opportunities and associated economic activity, as well as activities associated with recreationists and others as a result of bison.

3.7 Alternatives Identified during Scoping but Not Considered in this EIS

The following suggested alternatives are outside the scope of this planning process and are not being considered as viable alternatives in this draft EIS:

Change How Yellowstone National Park Manages its Bison: The Interagency Bison Management Plan (IBMP) guides management of YNP bison and is being revised in a collaborative process separate from this statewide EIS.

Change How Bison are Handled When Migration Out of YNP Occurs: This alternative is not realistic within this process because the ways in which Montana and federal agency partners manage bison that migrate outside of YNP fall under the jurisdiction of the IBMP. Suggestions to dramatically change these management practices would require the development of a new IBMP. This is a process that is outside the sole jurisdiction of FWP and would require a large-scale effort involving numerous state, federal, and tribal management partners and processes.

Guide Tribal Management of Bison: This alternative is not realistic within this process because the manner in which different tribes *currently* manage bison on their sovereign reservations is outside the jurisdiction of FWP and the State. (There is typically no State involvement in the management practices or hunting programs that the tribes choose to implement because they are sovereign entities. Exceptions to allow joint management of hunting opportunities could be made through negotiated MOUs between FWP and tribal entities and would be necessary for implementation of Alternative #3 above (Section 3.2.3)

Send Bison to Other States: This EIS is being completed to evaluate bison conservation and management opportunities only within the State of Montana.

Restore Bison Across All of Montana: Current social, biological, and political constraints make restoring bison across their entire historic range in Montana unrealistic. Much of their historic range has been converted to other uses and there would be an unmanageable amount of conflict.

Confined Herd similar to the Moise Herd: Some confined herds are managed to emphasize herd productivity and often use supplemental feed. They also have round ups and sales, such as Custer State Park in South Dakota. Custer holds three sales per year to dispose of surplus bison and removes others through guided hunts (Boyd, 2003). There are other herds, which are smaller and used primarily for education and historical display such as the small herd of 11 bison at Hot Spring State Park in Wyoming (Boyd, 2003).

Other captive herds are used for conservation and tourism, such as the herd at the National Bison Range in Moise, which has a genetic management program as a major objective. The purpose of a captive herd determines many aspects of the management program. Management of a confined herd like that at Moise would not fulfill the desire by some for FWP to 'restore' a bison herd somewhere on the landscape nor would it likely meet FWP's

responsibility to manage bison as a valuable native wildlife species. Many hold the perspective that a captive herd cannot be considered wildlife, but is instead semi-domestic. The USFWS does not view private commercial herds as contributing to species recovery overall and thus a captive herd may be viewed similarly and not reduce overall concern for the species. There could also be limited ecological impact as bison would not be able to utilize the landscape to meet their seasonal needs on the landscape.

One of the primary factors associated with the management of a confined herd is the potential cost. The 2011 USFWS National Bison Range operating budget was more than \$2 million for wildlife management, site maintenance, visitor services, law enforcement, and personnel costs. Within Custer State Park bison are managed alongside other species so while there is not a separate bison management budget some costs are directly bison related and are estimated to be around \$60,000 annually. The Raymond Ranch in Arizona has an annual operating budget of approximately \$100,000.

There are many who are concerned with the idea of hunting within a fully confined setting such as at Moise. The Raymond Ranch in Arizona, for example used to drive bison into a smaller area for hunting, but the public felt this presented an unfair chase situation. There would be other risks to recreational users of any area selected for a confined herd as the necessary bison management would be intense and could result in more restrictive uses or even full closure of the area.